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BUILDING ESTATES

A RUDIMENTARY TREATISE

ON THE

DEVELOPMENT, SALE, PURCHASE, AND GENERAL
MANAGEMENT OF BUILDING LAND,

INCLUDING

THE FORMATION OF STREETS AND SEWERS,

AND

THE REQUIREMENTS OF SANITARY AUTHORITIES

By FOWLER MAITLAND

LAND AND ENGINEERING SURVEYOR

With Plans and Illustrations



LONDON

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PREFACE.

ALTHOUGH there are several books from which guidance may be obtained on various points connected with the work of the Surveyor, in relation to Building Estates, I do not know of any one which professes to treat of it as a whole.

It is, therefore, hoped that this volume may prove useful to some who, without previous experience, find themselves engaged on work of this nature; or who may be otherwise interested in the sale, purchase, or development of Building Land.

It will be seen that the volume is divided into four parts—the first treating of the subject generally; the second of the work preparatory and incidental to the development of an estate; the third of the mode of procedure, financial and other arrangements involved in the sale and purchase; while the fourth contains forms and tables useful for various purposes connected with the subject.

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BUILDING ESTATES.

PART I.

THE DEMAND FOR BUILDING LAND, AND THE MANNER
IN WHICH IT IS MET.—LAND ELIGIBLE FOR BUILD-
ING.—THE WORK OF SURVEYORS IN CONNECTION
WITH BUILDING LAND.

The Demand for Building Land, and the Manner in which it is met.

THE population of England and Wales increased between the years 1801 and 1881 from 8,892,536 to 25,968,286, being an increase of 17,075,750 persons. Of course this necessitated the provision of a proportionate number of dwelling-houses, and it is calculated that during the same period the number of inhabited houses in the country increased from 1,575,923 to 4,833,844, an increase of 3,257,921 houses, being nearly in the proportion of one house to every five persons.

It further appears that the population of urban districts increased more than twice as fast as that of rural districts; and consequently the increase in the number of dwelling-houses would be proportionately greater in the neighbourhood of towns than that in country places.

The rate of increase in the population of different

towns is very unequal, depending upon the progress of the trade, manufacture, or other causes to which the town owes its growth. Thus while many cities and country towns which ranked among the first in importance in the days of stage-coaches have, since the introduction of steam into the various departments of industry, and the growth of railways, remained at a standstill, or perhaps declined in population, others, better suited by position for manufacturing and commercial centres, have doubled or trebled their population; while several towns, now of considerable size, such as Middlesborough, Barrow, Crewe, and Widnes, have sprung entirely into existence within the last half century.

Wherever the population of a town is rapidly increasing, a constant demand springs up for the land in its vicinity, for the purposes of its principal industries, and also for the erection of dwellings to meet the wants of the increasing population; and the land around such towns is in a constant state of transition, presenting one year the appearance of fields in cultivation, the next of brick-fields, waste or partially built upon ground, and the third of streets and houses, scarcely distinguishable from the older parts of the town; while old residents in large towns will point to busy thoroughfares which they remember as country lanes.

While the increasing population of various towns is frequently referred to with satisfaction by their inhabitants, as indicating the prosperity of the commerce or manufactures in which they are engaged, the changes consequent upon such increase often occasion a feeling of regret in the minds of those who witness them, as they see their favourite pleasure-resorts one

by one lose their charms, and the enjoyment of country walks become more and more difficult to obtain. While we cannot withhold our sympathy from those who deplore these results of the immense growth of towns, it is difficult to suggest a complete remedy, other than that the industries of which they are the seats should cease to prosper, which is scarcely to be desired. For our present purpose, however, it will be sufficient to remark that the increase in the number of houses simply meets a demand brought about by other agencies; and, remembering that the newly-built streets and houses gradually become integral parts of the town, to recognise the importance of due care and consideration in carrying out the various operations incidental to the changes, as bearing upon the future health and prosperity of the town as a whole.

To a certain extent the demand may be met by the erection of dwellings having a frontage or access to existing roads, but where this is not sufficient some arrangement is necessary under which new streets can be formed and suitable plots adjoining them sold or leased. It frequently happens that the greater portion of the land eligible for this purpose is in the hands of one or two large landed proprietors, whose ancestral estates abut upon, surround, or include the town, and who may themselves arrange through their agents for laying out the necessary streets and granting suitable plots from time to time as the demand arises.

Again the increase in the value of land, when it comes within the range of building operations, induces capitalists (either individuals or companies formed for the purpose) to regard the purchase of land in the neighbourhood of towns as a profitable speculation, in view of holding it till such time as the demand may make it

expedient to lay it out in building lots and to offer facilities to builders of more limited means.

Lastly, a number of persons desirous of erecting dwellings for themselves in a certain locality may join together for the purpose of acquiring a suitable estate, which they can lay out into roads and building plots to meet their individual requirements, dividing the total expense in such manner that each one may pay a share proportionate to the value of the plot allotted to him.

In the neighbourhood of most large towns there exist a number of smaller residential estates which, from becoming unsuited to their purpose owing to the growth of the town or from various family causes, are from time to time thrown into the market and offer special facilities for the operations of speculators and land societies, and assist in meeting the demand for land for the erection of smaller dwellings.

Land eligible for Building.

In looking at a good map of a town, especially if a recent map be compared with one of older date, it will generally be seen that the growth has not proceeded regularly from the centre, but has been more rapid in some directions than others.

The shape or form of towns is in a great measure determined by the nature of the circumstances which have given rise to their growth. In ancient times villages and towns arose from the natural tendency of the population to gather themselves into communities for the sake of mutual society and protection. Some of these being found convenient centres for the exchange of produce or the necessities of life became market towns, and formed the meeting-place of roads leading

from all parts of the surrounding country. Other towns grew up owing to the existence of mineral wealth in their vicinity, or from the site offering advantages for the pursuit of various manufactures, such as in old times the presence of water-power or wood for fuel, and in later days of coal and iron; while sea-ports were established in places which offered safe and convenient anchorage for vessels engaged in home and foreign trade, and pleasure-resorts were chosen for their salubrity or beautiful scenery, sea-side enjoyments, mineral springs, or other attractions.

The same causes continue to influence the direction in which the most important growth takes place. Thus market towns extend along the lines of the roads which lead into them from the surrounding districts, the intervening or back land filling up more slowly. Manufacturing towns spring up in clusters around the spots which offer the most convenient sites for mills and furnaces until they approach so closely as to form one large town, while sea-ports and watering-places follow the line of coast, bay, or estuary upon which they are situated, while many towns which partake of more than one of these characteristics exhibit their different features in varying proportions.

In buying a piece of land upon which to build a house for one's own occupation, individual necessities and tastes may be left to point out the most suitable position, but before purchasing land to lay out for building as an investment, or incurring the expense of forming roads, &c., and dispensing with the profits accruing from agricultural occupation, it is necessary to consider every question which may affect its eligibility from the point of view of others.

Of course the first consideration is whether houses

built in that position would be likely to command suitable tenants, and the best criterion of this is found in the fact of a demand existing for houses in the immediate neighbourhood, as evidenced by those already built being readily let.

If from any circumstances sufficient opportunity for applying this test does not exist, the distance from the business centres, and facilities for communication therewith, will generally be the safest guide.

Frontage or ready access to good roads is a necessity. If there is not a communication with a thoroughfare leading to the town from some part of the estate, it would be necessary to arrange for such communication across another owner's land, which might be impracticable, and would almost certainly be costly, unless mutual advantage could be gained thereby; moreover, back land would not be likely to come into demand until after that lying next to the highway had been utilised.

As towns increase in size, rendering access to country walks and fresh air more difficult and a plot of garden ground an expensive luxury, a desire manifests itself among a proportion of the population to fix their dwellings a short distance from the town, provided there is a rapid and easy means of communication with the scene of their business operations. Thus the land around some outlying village or railway station frequently comes into the market before land nearer the town, and if an omnibus or other mode of travelling which admits of taking up passengers by the way is established between such a point and the town, the frontages along either side of the intervening road are soon built upon.

The question of water supply is an important one in relation to Building Estates; and it should be a point

for consideration whether the land comes within the area supplied with water by any company or corporation, and if so, the distance from their existing pipes, and terms upon which a supply can be obtained; or if not, whether a sufficient supply is obtainable from other sources at reasonable expense; also whether there is an available supply of gas.

Several causes may act as objections to the selection of ground suitable in other respects for building purposes; such are great differences in the level of the ground, which would necessitate too rapid gradients in the streets, or entail expense in filling up hollows, removing large quantities of earth, or otherwise increasing the cost of road formation and building; low level, rendering the drainage difficult or the land liable to floods; a water-charged subsoil, making the district unhealthy; proximity to unpleasant trades, &c.

Similarly there are other reasons which may enhance the desirability of land for building purposes besides those previously mentioned as almost necessary. Such are the existence of building materials upon the estate, pleasant prospects, subsoil of rock or gravel, salubrious atmosphere, &c.

The foregoing observations may be summarised as follows:—

The main features which render ground eligible for building upon are:—A demand for houses in the neighbourhood, proximity to a town, frontage to good roads, train or omnibus accommodation, gentle gradients which afford facilities for drainage without making the roads too steep, sufficient level above the sea or neighbouring river or watercourse to insure freedom from floods, good water and gas supply, facilities for procuring building materials, pleasant scenery,

healthy neighbourhood, and lastly, freedom from nuisance caused by unpleasant trades or manufactures, as far as it can be obtained without necessitating too great distance from the scene of business operations.

The Work of Surveyors in connection with Building Land.

The report handed in by the English delegates to the International Congress of Surveyors at Paris upon the position and functions of surveyors in England contains a statement of which the following is a translation:

“The wonderful growth of the manufacturing industries during the last half century has created an enormous demand for building land, has trebled and quadrupled the populations of many ancient places, and has called into existence new towns numbering their tens of thousands of inhabitants. Land which possessed but an agricultural value a few years ago now realises in certain situations thousands of pounds an acre, and in many cases the annual rental value at the present moment is equal to the fee simple of twenty-five or thirty years ago.

“The valuable interests involved and their due conservation give employment to a large class of surveyors, whose practice consists for the most part in laying out and maturing for the market property of this character, and in superintending the construction of the houses which cover it.

“The operations of this class of surveyors are mainly confined to the neighbourhood of large towns, and upon their skill and judgment interests of enormous value are dependent.”

There are several points, such as relate to the investigation of the vendor's title to the estate and the proof

of same to be given to the purchaser, the drawing up of covenants inserted in agreements, leases, and conveyances, so as to be legally binding upon all parties, and other questions concerning the legal transfer of the property, which must be the work of the solicitor connected with the estate, and upon these matters no more will be said than is necessary to render the whole subject intelligible.

It will, however, probably be the duty of the surveyor or land agent to advise upon all points relating to the building restrictions to be observed, and the arrangements for payment of interest, rent, purchase-money, or expenses of laying out, as well as to prepare (from survey if necessary) a plan of the estate, report upon the value of different parts, lay out the lines of streets on plan and set them out upon the ground, to secure compliance with the regulations of the sanitary authority having jurisdiction in the district, to superintend the construction of the necessary streets and sewers, and make all calculations as to their cost and its apportionment among the several purchasers, to prepare plans of the lots for agreements, conveyances, &c., to conduct the setting out and admeasurement of such plots on the ground, and to inspect and frequently to value the buildings erected on the estate, and it is upon these points that it is intended to treat in the present volume.

PART II.

JURISDICTION AND REGULATIONS OF SANITARY AUTHORITIES.—LAYING OUT ON THE PLAN.—SURVEYING OPERATIONS.—STREETS AND SEWERS.

Jurisdiction and Regulations of Sanitary Authorities.

THE narrow streets and closed-up courts and alleys which are to be found in the older parts of many of our towns are an example of the insufficiency of the ordinary law of supply and demand to secure healthy dwellings for the poorer classes.

However necessary sanitary precautions may be in thinly populated districts or in small towns, they become of tenfold more importance as buildings spread in all directions, rendering access to purer country air almost impossible. Year by year corporations expend large sums in widening streets and clearing away overcrowded and unhealthy districts. Whether the growth of knowledge and interest in sanitary matters would allow of such economy of space being practised at the present day, if there were no legislation to interfere, may to some extent be doubtful, but prevention is better than cure, and it is certainly more prudent to take such precautions as will insure streets being laid out and houses built, so as to conduce to the health of the inhabitants, than to be afterwards at the expense of

compensating the owners for the privilege of remedying the evil.

Acting upon these ideas, many towns in the early part of the present century obtained Improvement Acts, and in 1848 a Public Health Act was passed, which applied to all England and Wales. This was supplemented at short intervals by various Acts relating to special points, and in the year 1872 a Local Government Board was constituted at London, having supervision over the various local authorities throughout the country. Finally the Public Health Act of 1875 was passed, dealing with every question relating to the health of the inhabitants of England and Wales, and superseding all the former Acts with the exception of a few sections.

For the purposes of this Act England and Wales are divided into areas, called "Urban Sanitary Districts" and "Rural Sanitary Districts," the former being governed by Town Councils, Improvement Commissions, and Local Boards of Health, and the latter, which comprise all the area within a Poor Law Union not included in any Urban Sanitary District, being under the control of the Board of Guardians for such Union.

The following is a summary of the principal provisions of the Public Health Act, 1875, having special reference to the subject of laying out Building Estates:—

1. Any urban authority may agree with any person having lands within their district that such person may, at his own expense, make roads through his land for public use, and that such roads shall become, on completion, highways maintainable and repairable by the inhabitants at large, *i.e.* out of the rates.

Also, with the consent of two-thirds of their number, the authority may agree to pay any portion of the expenses of making such roads.

2. Every urban authority may make bye-laws with respect to the level, width, and construction of new streets, and the provisions for the sewerage thereof, and also with respect to the sufficiency of space about buildings to secure a free circulation of air, and may provide for the observance of such bye-laws by enacting therein such provisions as they may deem necessary as to giving of notices and deposit of plans and sections by persons intending to lay out streets or to construct buildings, and as to the power to pull down and remove any work begun or done in contravention of such bye-laws.

3. When streets laid out as described in paragraph 1 have been completed to the satisfaction of the urban authority, such authority may, if they think fit, by notice in writing put up in any part of the street, declare the same to be a highway repairable by the inhabitants at large, and such street shall become a public highway, unless within one month after the notice has been put up the proprietor or majority in number of the proprietors object thereto by notice in writing to the urban authority.

4. When any street within an urban district (not being a highway repairable by the inhabitants at large), or any part of such street, is not sewered, levelled, paved, metalled, flagged, channelled, and made good, or not lighted, to the satisfaction of the urban authority, such authority may, by notice addressed to the owners or occupiers of the premises abutting on the parts requiring completion, require them to do the necessary work within a time to be specified in the notice, and if

such notice is not complied with the urban authority may, if they think fit, execute the works mentioned therein, and may recover the expenses incurred by them in so doing, in a summary manner, from the owners, according to the frontage of their respective premises, and in such proportion as is settled by the surveyor of the urban authority, or in case of dispute by arbitration, in the manner provided by the Act.

5. Before giving such notice the urban authority shall cause plans and sections of any structural work intended to be executed under this section, and an estimate of the probable cost thereof, to be made under the direction of their surveyor, and such plans, sections, and estimate shall be deposited in the office of the urban authority, and be open at all reasonable hours for the inspection of all persons interested therein during the time specified in such notice. The plans and sections to be on a scale of not less than 1 inch to 88 feet for a horizontal plan, and not less than 1 inch to 10 feet for a vertical section; and in the case of a sewer to show the depth of such sewer below the surface of the ground.

6. All streets within an urban district, which at any time become highways repairable by the inhabitants at large, shall vest in and be under the control of the urban authority.*

Except as expressly provided therein, the Public Health Act of 1875 does not extend to the metropolis, which is under the control of the Metropolitan Board of Works, constituted by the Metropolitan Management Act of 1855, and composed of members elected by the respective vestries and district boards in the metropolis.

* By section 276 of the Public Health Act, 1875, the Local Government Board may, on the application of a rural authority, or under certain conditions, invest such rural authority with the powers and obligations of an urban authority under the Act.

In the principles upon which they are founded, and the means by which it is endeavoured to secure the desired ends, much similarity will be found to exist between the general Public Health Act and bye-laws framed in accordance therewith; the Metropolitan Act, amendments and bye-laws, and the special local Acts which have been granted to certain towns. Provisions which by the general Act are left to be dealt with by the bye-laws are in some of the local Acts incorporated in the Acts themselves. A careful study of the Acts and of the special bye-laws in force in the district is advisable before proceeding to lay out land for building in any neighbourhood. Except in London, the Public Health Act, 1875, supplements the local Acts, the authorities being empowered to take proceedings under either.

In the following pages the model bye-laws issued in connection with the Public Health Act, 1875, are taken as illustrating the general principles upon which such bye-laws are framed, but some of the principal points of similarity and difference between them and the metropolitan bye-laws are pointed out.

BYE-LAWS.

The Local Government Board issues a code of model bye-laws for the guidance of urban authorities in framing bye-laws for operation in their respective districts. These bye-laws may be modified to meet the requirements of different localities, but must receive the sanction of the Local Government Board before they can take effect.

The difficulty in framing and carrying out such bye-laws is to anticipate the contingencies which are likely to arise, special clauses often operating harshly in cases

where a slight deviation would entail no sanitary evil. This is especially the case with regard to the clauses regulating the space around and between buildings when they affect estates already partly laid out and built upon. Or clauses may be so worded that builders may comply with their letter by means totally contrary to their spirit, or by expedients ridiculous in themselves, detrimental to the property, and possessing no sanitary advantage whatever, but rather the contrary.

The provisions by which it is endeavoured in the bye-laws to secure the healthiness of the district in which they operate may, so far as they affect this subject, be classed under three heads, viz. :—

1st. Provisions as to giving of notices and the deposit of plans and sections by persons intending to lay out streets or to construct buildings.

2nd. Provisions as to the level, width, and construction of new streets, and the provisions for the sewerage thereof.

3rd. Provisions as to the sufficiency of the space about buildings to secure a free circulation of air.

1st.—*As to the deposit of plans and sections by persons intending to lay out streets.*

The provisions of the model bye-laws, issued under the Public Health Act of 1875, as to the deposit of plans and sections by persons intending to lay out streets, &c., require that every person who shall intend to lay out a street shall deposit with the sanitary authority a plan and sections of such intended street, drawn to a scale of not less than one inch to every forty-four feet, and shall show upon such plan the names of the owners of the land through or over which such street shall be intended to pass, the level and

width, the points of the compass, the mode of construction, the name of such street and its position in relation to the streets nearest thereto, the size and number of the building lots, and the sites, height, class, and nature of the buildings to be erected therein, and the height of the division and fence walls thereon, and the name of the person intending to lay out such street, who shall sign such plan, or cause the same to be signed by his duly authorised agent (Plate I.).

And shall show upon the section the levels of the present surface of the ground above some known datum, the intended level or rate or rates of inclination of the streets, the level and inclinations of the streets with which it is intended that such street shall be connected, and the level of the lowest floors of the intended buildings (Plate II.).

Bye-laws under the Act for the Better Local Management of the Metropolis provide that four weeks at least before any new street shall be laid out, written notice shall be given to the Metropolitan Board of Works by the person or persons intending to lay out such new street, stating the proposed level and width thereof, and accompanied by a plan of the ground, showing the local situation of the same.

2nd.—*With respect to the level, width, and construction of new streets, and the provisions for the sewerage thereof.*

The following provisions of the model bye-laws indicate the points to be attended to under this head in the preparation of the plans and sections just mentioned.

Plan and Cross Section.

Total width of street not less than 36 feet.

Width of carriageway not less than 24 feet.

The surface of the carriageway to curve or fall from the centre or crown to the channels at the sides, the height of such crown above the level of the side channels being calculated at the rate of not less than $\frac{2}{3}$ and not more than $\frac{3}{4}$ of an inch for every foot of the width of such carriageway. The footway on each side of the street to be not less than $\frac{1}{2}$ of the entire width.

If the footway be not paved, flagged, or asphalted, it shall fall towards the curb at the rate of $\frac{1}{4}$ inch in every foot of width in the footway; and if the footway

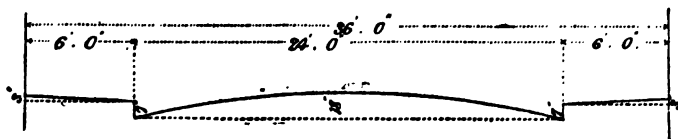


Fig. 1.

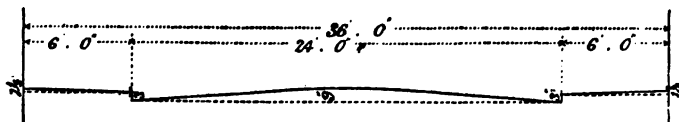


Fig. 2.

be paved, flagged, or asphalted, not more than $\frac{1}{2}$ inch and not less than $\frac{1}{4}$ inch in every foot of width.

The height of curb or outer edge of footway above the channels (except in the case of crossings) to be not less than 3 inches at the highest point of such channels, and not more than 7 inches at the lowest point of such channels.

A street less than 100 feet in length, and not intended to be used as a carriage-road, may be made not less than 24 feet wide (this does not apply to back roadways or passages).

Every new street shall have at one end at least an

entrance equal to the width of the street, and open from the ground upwards.

The bye-laws in force in the metropolis differ in the following respects from the foregoing—

Every street intended for carriage traffic to be 40 feet wide at least. If intended for foot traffic only, 20 feet wide at least.

Carriageway must fall from the crown at the rate of $\frac{3}{8}$ of an inch at least for every foot of breadth (minimum fall only specified).

Curb to rise not less than 4 nor more than 8 inches above channels.

Slope of footpath towards the curb must be $\frac{1}{2}$ an inch to every foot in width if unpaved, or not less than $\frac{1}{4}$ of an inch to every foot in width if the footpath be paved.

Every new street, unless the Metropolitan Board of Works otherwise consent in writing, to have at least two entrances of the full width of such street.

Longitudinal Section (Model Bye-Laws).

Every person who shall lay out a new street shall lay out such street at such level as will afford the easiest practicable gradients throughout the entire length of such street, for the purpose of securing easy and convenient means of communication with any other street or intended street with which such new street may be connected, or may be intended to be connected.

Sewerage.

Although the Public Health Act enacts that urban authorities may make provisions with respect to the sewerage of new streets, the model bye-laws do not contain any such provisions, beyond specifying the sectional form of the streets.

It is, however, clear that where it is intended that the local authority shall adopt the streets and sewers when completed, it is as necessary that the latter should be in accordance with their requirements as the former, or even more so, as the whole scheme for the sewerage of the district may be affected thereby.

In some districts an arrangement is made by which the local authority themselves make the sewers at the expense of the person laying out the land; in others the sewers are required to be shown on the deposited plans and sections of the streets, as in the metropolis, where it is provided that "All persons wishing to make or branch a sewer into a sewer vested in the Metropolitan Board of Works, or in any vestry or district board, shall lay the plans and sections relating thereto before the vestry or district board in which the last-mentioned sewer shall be situate, and before sanctioning the construction of such new sewer the vestry or district board shall submit the plans and sections when approved by them to the Metropolitan Board of Works for their sanction."

In the bye-laws of some other districts it is provided that when the plan of a proposed new street is laid before the board, their surveyor shall specify in writing the depth, inclination, form, size, materials and other particulars of the nearest sewer belonging to or under the control of the board, and the owner or builder shall form or make the sewer required for such new street in conformity with such specification, unless he can show to the satisfaction of the board that some modification or deviation is necessary.

It remains for those intending to lay out building land to make themselves acquainted with and conform to the special rules in force within their district.

3rd.—*With respect to the sufficiency of space about buildings to secure a free circulation of air.*

Although these provisions come more directly into operation when plans are submitted for the erection of buildings, yet they require to be carefully considered in laying out the land in order to afford prospective purchasers full facilities for complying with such regulations, as a want of due foresight in this matter would militate seriously against the disposal and value of the lots on an estate.

The model bye-laws aim at securing the free circulation of air about buildings in two ways, in addition to the regulations respecting streets which we have previously noticed. First, by stipulating the minimum superficial area of yard space to be allowed in the rear of a building; and, secondly, by specifying the minimum lineal distances which will be permitted across such space between buildings of certain heights.

Thus it is stipulated in the model bye-laws that no house shall have less than 150 square feet of yard space at the rear thereof, free from any erection thereon above the level of the ground except a water-closet, earth-closet, or privy, and an ashpit.

The distance from every part of such house to the boundary of any lands or premises immediately opposite or adjoining to be not less in any case than 10 feet.

If such building be 15 feet high the distance to be 15 feet at least.

If such building be 25 feet high the distance to be 20 feet at least.

If such building be 35 or exceed 35 feet high the distance to be 25 feet at least.

The question of the sufficiency of space about buildings has been dealt with in the metropolis in some new

clauses amending the Metropolis Management Act, 1855, and the Building Act, 1855, and the Acts amending the same.

In these clauses a kind of sliding scale is adopted by which the extent of open space required varies with the frontage of the building as shown by the following table:—

Frontage not exceeding	Space not less than
15 feet . . .	150 square feet.
20 " . . .	200 " "
30 " . . .	300 " "
Frontage exceeding 30 feet .	450 " "

In this scale it will be noticed that the maximum frontages not exceeding 30 feet require the same lineal distance back in each case, namely, ten feet, to give the minimum open area required.

The course of procedure entailed upon persons laying out building estates by the clauses of the Public Health Act, and bye-laws just referred to, is as follows:—

When it is intended to lay out the whole or a portion of any estate for building, plans and sections of the streets and sewers to be formed* to the scales, and giving the particulars required by the bye-laws, are deposited with the urban authority, together with the necessary notices that such streets when completed are intended to be dedicated to the public. At a meeting held within a month from the receipt of such plans the authority should examine them and report to the depositor their approval or disapproval. If approved the work may be proceeded with, and upon its completion to the satisfaction of the authority they will adopt such streets and sewers, which will be from that time maintained out of the rates levied upon the inhabitants of the district. But to avoid any difficulty

* See Sewerage, page 18.

arising as to the streets being completed to the satisfaction of the authority, it is frequently the practice to form the streets only so far as is necessary for the sale of plots and the erection of buildings, leaving the authority to proceed, in the manner explained in paragraphs 4 and 5, to finish the work and recover the expense of so doing from the respective owners whose premises abut upon the street.

Laying-out on the Plan.

In the foregoing pages I have attempted to give some idea of the general scope of the various Sanitary Acts and the operation of bye-laws supplementing them as they affect the management of Building Estates. Their importance in relation to this subject will be recognised when we consider that there is now no part of England and Wales which does not lie within the area of either the metropolitan or some urban or rural authority, and even where there are no bye-laws in operation the regulations which we have noticed as to the width of streets, proportion of footpath and carriageway, and other similar matters, furnish us with a good criterion for judging on such matters as they present themselves when we come to deal with the question of how to lay out our streets and building plots upon the plan.

Before proceeding to lay out on paper the form and direction of the streets and plots, a fairly accurate plan of the land should be obtained and examined upon the ground. For preliminary observations a 25" or a 6" Ordnance Map may answer the purpose, the contour lines at differences of 25 feet in height upon the latter of which will prove useful if there be great variations in level.

In the case of a small estate which is to be laid out all at once, it will only be necessary to consider the requirements of its own limited area, or what advantages may be gained by arrangements with adjoining owners. But it frequently happens that all or the greater portion of the land around a town is in the hands of one owner, in which case the laying out must be considered with a view to the development and advantage of the whole estate, and not only of the part which is to be immediately devoted to building purposes.

It thus not unfrequently happens that towns where the land has all belonged to one or two owners are more symmetrically and regularly laid out than those where there have been a large number of small owners, each anxious to obtain the largest amount of profit possible to himself.

In opening out an estate of any magnitude it is important that the principal roads should be so laid out as to catch a good proportion of the traffic existing between the town and other places in the neighbourhood, and also to afford future residents upon the estate the means of ready communication with the town or with railway stations, omnibus routes, or other facilities for reaching it. To effect this the roads should be so laid out as to form connecting links between main roads already existing, if possible shortening the distances between the places on the route. (See Fig. 3.)

The further subdivision of the land consists in dividing it into building plots and streets giving access to them, the former comprising the house with its yard, garden ground, or other private space belonging thereto, and the latter the carriageway and footpaths.

The size of the plots is governed by the character

of the houses intended to be built, the custom of the neighbourhood, and the value of the land. Thus, if the land was of little more than agricultural value, half an acre might be allotted to each house, increasing the rent only two or three pounds yearly; while if the land was realising the not uncommon price of 6d. per yard ground-rent, half an acre of land would represent an increase to the rent of £60 10s. per annum.

The class of houses for which the land is likely to let most readily is of course determined by the character

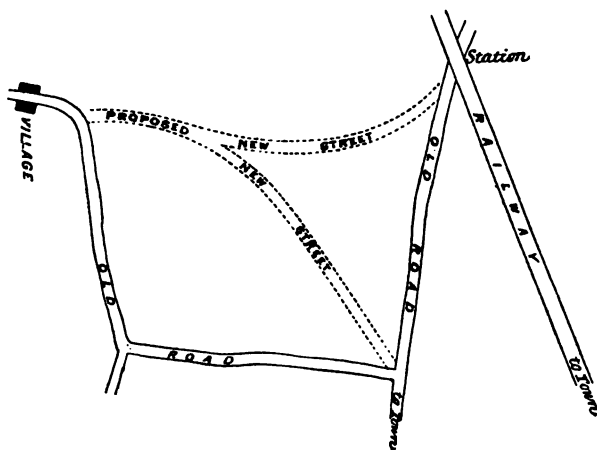


Fig. 3.

of the neighbourhood. Thus the proximity of mills or manufactories, which would cause houses to let readily to the people employed in them, would be considered a great disadvantage by the wealthier classes who were not concerned in them, or had leisure and means to enable them to live at some distance from the scene of their daily labours.

Having determined approximately the size of the plots, the next question is the direction to be given to the roads or streets. It is impossible upon this point to give any instructions which would suit the numberless variations in the shape and nature of the ground to be treated; but the principal points which would claim consideration would probably be—1st. What arrangement will give the greatest number of plots of about the required size? 2ndly. What arrangement will combine this qualification with that of requiring the least length of roads or streets to be formed? And 3rdly. Are the differences in the level of the ground at various points so great as to make the roads inconveniently steep if run in certain directions, or to render the expense in excavating and embanking much greater one way than another?

It will be seen that we have two cases to consider, between which there is a very clear line of distinction. The first is that in which the cost of the land is small compared with the value of the buildings erected upon it, and the second in which the price of the land bears so large a proportion to the total value that it is necessary to restrict to the minimum the area of land apportioned to each dwelling.

In laying out land which comes under the first class, various methods may be adopted to give variety to the neighbourhood and avoid the monotony inseparable from long straight streets; thus in some places we find the buildings disposed around squares, ovals, or circles, the centre of which is laid out as a pleasure-ground for the use of those dwelling in the houses around it. Again, the roads may be formed in a crescent shape or serpentine, or laid out as a park with entrance gates, and so arranged as to preserve to some extent trees or

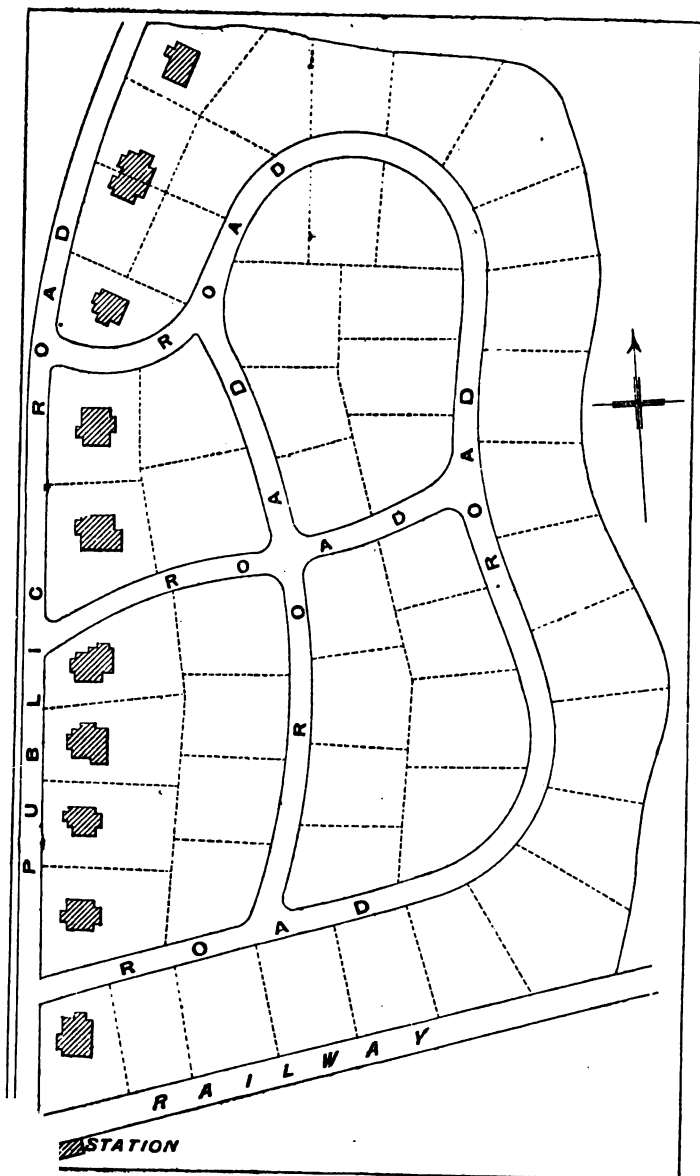


Fig. 4.

other objects of natural beauty which may exist on the ground prior to its being laid out. (See Fig. 4.)

When the area of the plots is not confined to the smallest quantity necessary to accommodate the houses, these methods may frequently be employed with advantage, and even with economy on hilly ground where the roads are skilfully adapted to the contours of the

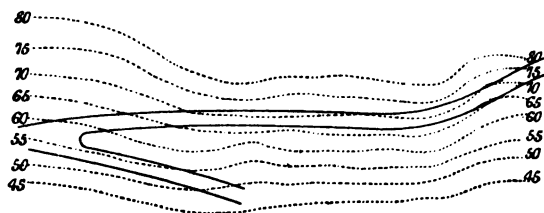


Fig. 5.

ground (see Fig. 5). It should, however, be borne in mind that the effect attained is as seen on the ground and not as it appears on paper, so that what appeared a very pretty geometrical design on paper might be entirely lost when it came to be carried out.

The second case is that of houses built upon land so valuable in proportion to the rent of the building that there is strong reason for exercising the greatest possible economy of space. This condition exists in most of our large towns, where the population is principally composed of the industrial classes whose income is not sufficient to induce them to pay a rental of more than from 3s. to 6s. per week for their houses, while the demand for such houses within a short distance from the scene of their labours causes the site of such dwellings to fetch a comparatively high price.

The illustrations (Figs. 6 and 7) are examples of objectionable methods of building houses, arising from the

too exclusive study of the economy of land. The first, Fig. 6, are what are called back-to-back houses, a term which, taken in connection with the sketch, will explain itself; the second, Fig. 7, are houses of the same class, but built in courts instead of each house fronting to an open street. It should be noticed that at the points marked $\Delta \Delta$ the courts are not even open to the street at all, but entered by passages which are built over—the courts thus forming stagnant wells excluding sun and air. In some cases, where houses of a superior

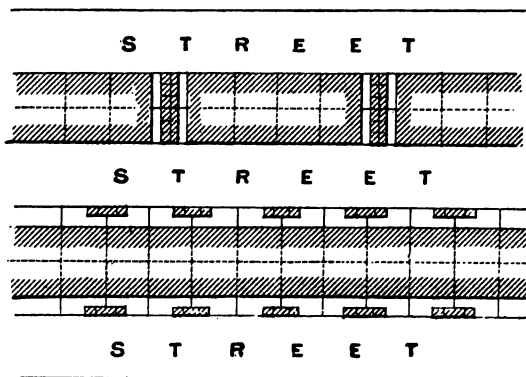


Fig. 6.

class have been erected facing the streets, they have, as the neighbourhood declined, been let off in rooms or stories to separate tenants, while the gardens at the back have been covered with court houses approached only by what had formerly been the side entrance to the garden.

It will easily be seen from our summary of the model bye-laws that they would allow of neither of these forms of buildings, though I understand that back-to-back houses are still erected in some northern towns.

The aim of the bye-laws is that every house should have an open space in front, of defined width, afforded by the street, and another open space at the back, occupied as yard or garden, and that no buildings shall be erected within stipulated distances of each other, from front to front and back to back, in order that a

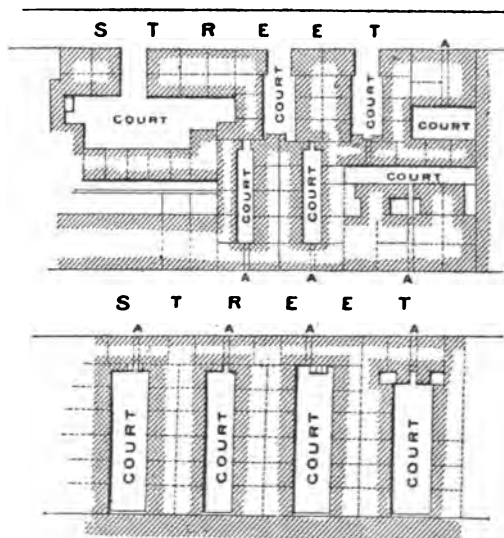


Fig. 7.

full current of air may be obtained both back and front into which every room shall have a window opening.

In the second illustrations (Figs. 8 and 9) two sets of plans are given, showing houses complying with the model bye-laws. They show two forms of cottage building common in Lancashire towns, containing two or three rooms on the ground-floor, and the same number, or perhaps an additional bedroom, upstairs; and have a yard at the back, which is approached for the

district where water-closets are in general use these passages may be dispensed with, as is mostly the case in London, but some receptacle for dust must be provided in the front, or it will have to be carried through the houses.

Now how does this description of a common class of houses affect the question of laying out the land?

In the first place, where the houses are expected to be of this or some similar pattern, the blocks of land are laid out in as rectilinear a form as practicable (see Fig. 10), and it is an object to have the cross

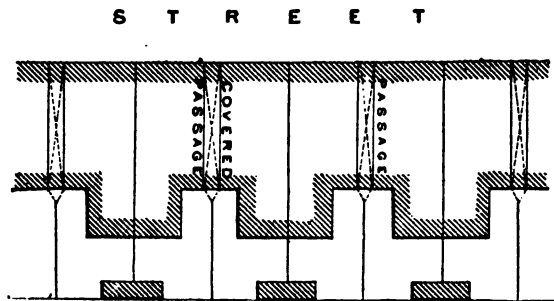


Fig. 9.

streets as nearly as possible at right angles to the main streets, as that form is the most economical for building. The blocks may be of any length, so as to contain any number of houses, but the minimum depth is determined by adding together—

1. The depth of the buildings.
2. The distance from the back of building required to give the stipulated yard space, and the necessary lineal distance to an adjoining property.

Thus in Fig. 8 the depth of the houses from front to back is 26 feet, and the frontage of each house is

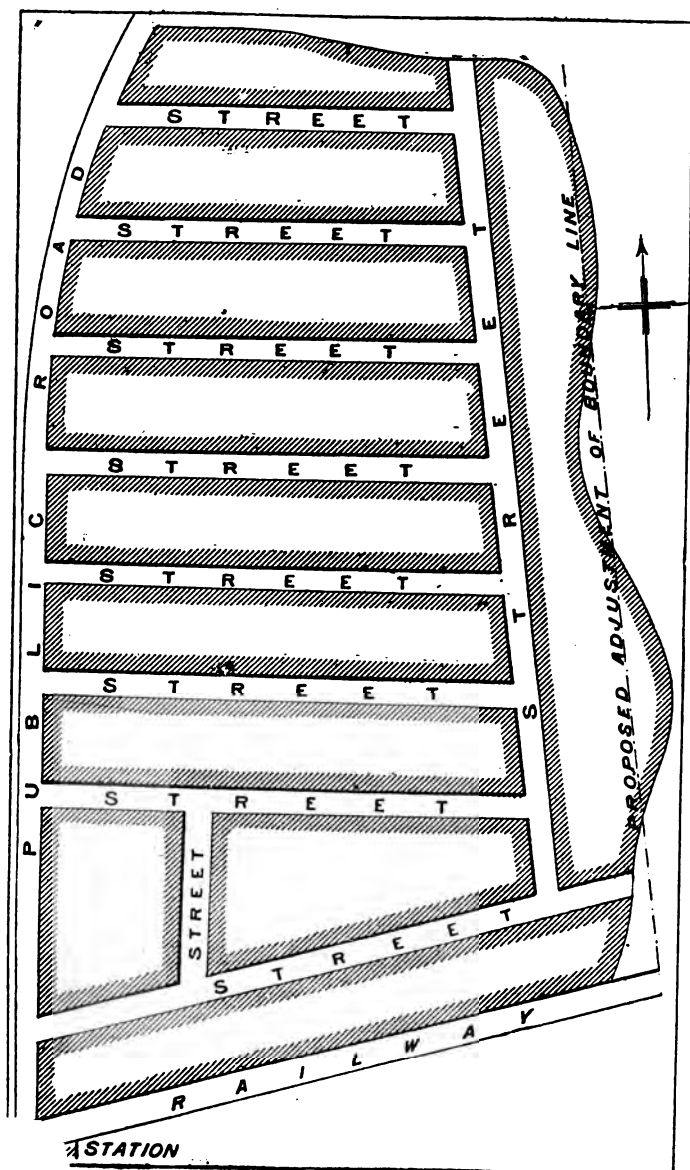


Fig. 10.

16 feet; 150 feet of yard space being required (see regulations of model bye-laws), 10 feet would be more than sufficient to the back-yard walls, but the height of the buildings being above 15 feet it must be made 11 feet, which, added to 4 feet of passage, gives 15 feet to the adjoining premises.* This 11 feet added to the width of the houses 26 feet = 37 feet. Two blocks of 37 feet = 74 feet, which, added to the minimum width of street required, viz. 36 feet, and the width of passage 4 feet, gives 114 feet as the least distance from centre to centre of street, which must be given to enable builders to comply with the bye-laws.

We should, therefore, divide our land into as many blocks as practicable, having a width of not less than 114 feet from centre to centre of street. If a narrow strip of garden ground was allowed for in front of the houses, which adds to the width of the street, and if kept in good order improves its appearance, and also adds to the privacy of the houses, the distance between the centres of streets would of course be increased by twice the width of such strip.

Surveying Operations.

Under this heading it is not intended to do more than indicate the various surveying operations likely to be required in dealing with building ground, referring the reader who may be unacquainted with the use of the various instruments and the practice of surveying to the several treatises dealing with that subject.

When it is intended to lay out an estate for building purposes, unless there already exists a plan drawn to a large scale and known to be accurate, it is desirable

* The width of passage might not be allowed to be included in this measurement, when 15 feet would be necessary to outside of yard walls.

to make a fresh survey, as the prices at which such land is retailed make trifling errors of importance. Upon this plan should be shown all the details of the existing buildings, fences, and ditches, and other features of the ground, and also so much of the surrounding land, streets, and buildings as may be likely to bear upon the question of laying out.

Where the estate is extensive, or likely to be sold in large lots, or to remain for a time partly occupied as agricultural land, it is often convenient to plot the survey to such a scale that measurements can conveniently be taken either by a scale of chains or feet. Thus a scale of 66 feet to an inch is equivalent to one chain or 100 links to an inch, or a scale of 33 feet to an inch equals two inches to a chain or 50 links to an inch. Or it may be convenient to adopt the minimum scale required for plans deposited with the sanitary authority, or a scale not less than that, so that tracings from the Estate Plan may be sufficient to meet their requirements.

Having drawn upon this plan the lines of the various roads and streets to be formed, the next proceeding is to stake these out on the ground, which if they have been accurately delineated upon the plan can be easily accomplished by setting off the lengths from centre to centre of streets, on similar lines laid out on the ground, which should be as nearly as possible at right angles to the lines of streets. Having fixed two points in any street, it can be continued, or intervening points determined, by means of ranging poles.

Where it is necessary to lay out the lines of streets at various angles one with another, the theodolite is the most convenient instrument, or for setting out lines at right angles, the cross-staff may be substituted,

though neither is indispensable, as by a little contrivance the object may generally be accomplished with the chain and poles only.

When the lines of the streets have been fixed upon it is usual to cut grips or narrow channels in the ground, along the centre line, or to measure off the widths and mark the line of curb-stone or buildings.

The next proceeding is to take levels along the centre lines of the streets, and to plot from them a section of the surface of the ground, the horizontal scale being the same as the plan, while the vertical measurements may be plotted to the same scale, forming a natural section, or if thought desirable, to a larger scale, such as 10 or 20 feet to an inch. If the ground is very steep or undulating it may be advisable to contour the whole surface, that is, to indicate the levels by lines traced out upon the ground at certain intervals of height, in such manner as to preserve the same level throughout their entire course; these being surveyed and drawn upon the plan, the differences in level of a line drawn in any direction can be perceived at a glance and sections prepared as may be found desirable. (See Fig. 5.)

When the formation levels have been drawn upon the section upon the principles explained in another section (see page 40), it is necessary to fix from the sections the various heights upon the ground wherever there is to be a change in gradient, so that the workmen may know at what height or depth the cuttings or embankments are to be finished. Intervening levels between these fixed points can be ascertained by the workmen by means of boning-rods, which are made of two pieces of wood fastened together in the form of a T. By placing the eye in such a position as

to glance along the top of any number of these a straight line is formed from which measurements may be taken to any required point and the distances above or below the ground fixed upon.

Thus, if it is intended to carry a street at a regular inclination from A to B (Fig. 11), and to continue some distance farther at the same gradient, at A and B boning-rods of any height, say 5 feet, are placed, then if rods are placed between them and beyond B, so that

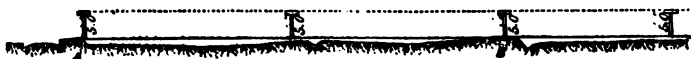


Fig. 11.

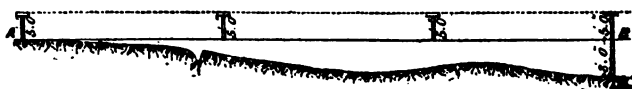


Fig. 12.

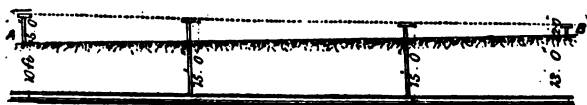


Fig. 13.

the eye just catches the top of them all, the line of street is 5 feet below the top of any of the rods.

Fig. 12.—Or A is the fixed level for commencing a street which must fall 4 feet between A and B. According to the sections the ground at B is 12 feet below A, therefore the street level at B will be 8 feet above the ground—place a 5-foot rod at A and a rod $8 + 5 = 13$ feet at B, a measurement of 5 feet below the top of rods seen in line with the tops of these will give the street level at any point.

Fig. 13, A B, is the formation level of a street. A line of sewer-pipes is to be 10 feet below A, and join

the main sewer 13 feet below B. Place a 5-foot rod at A and a 2-foot rod at B, the sewer will be uniformly 15 feet below the line of sight.

It now only remains to set out on the ground the various plots as they are sold, which may often only necessitate measuring the length of the plot along the front and back, or perhaps setting off lines at right angles to the frontage, and measuring the distance back along them.

One of the easiest ways of setting off a perpendicular when the length is not too great, is by means of two chains. Measure from the point the perpendicular is to start from a distance of eighty links along the base line, and put pegs or arrows in at both points; fix the ends of the two chains upon these pegs; take sixty links in the hand for the chain along the perpendicular, and the full length of the chain for the hypotenuse and pull both chains up tight. The point thus found will be in a line drawn from the required point perpendicular to the frontage line. Or any modification of this method may be adopted providing the two sides of the triangle containing the right angle are in the proportions of 3 and 4, and that subtending the right angle = 5 (Fig. 14).

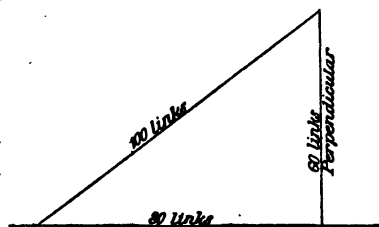


Fig. 14.

Or measure along the base line equal distances on each side of the perpendicular, and from the points thus found score equal distances in the direction required, and they will meet in a point on the perpendicular (Fig. 15).

Sometimes it is required to give the plot a certain extent of frontage, the area not being defined, sometimes a quantity of square yards is fixed approximately in the agreement at a price per yard, and the total price adjusted by after measurement, or it may be necessary to set out an exact number of square yards. If the opposite sides of the plot are parallel there will

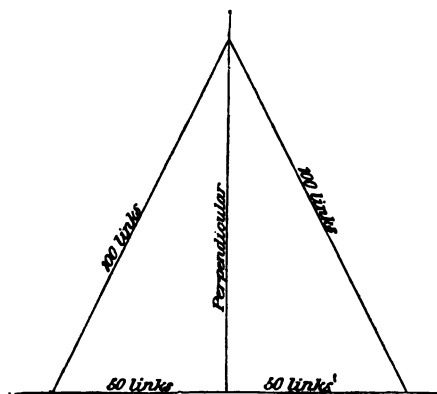


Fig. 15.

be no difficulty in doing this, but if not, a boundary line is set out to produce the area as nearly as can be guessed, the plot is then measured and the exact area computed, and one of the boundary lines moved a little backwards or forwards, as may be necessary to produce the exact area required.

Streets and Sewers.

CONTRACT DRAWINGS AND SPECIFICATIONS, &c.

On some estates the work connected with street formation, sewerage, &c., is carried on by a staff of workmen employed upon the estates, in others the work

required of this nature is let by tender to contractors. The former method offers advantages on extensive estates, where lots are sold in various parts from time to time as the demand arises, while the latter is generally adopted on smaller estates where all the streets are laid out at once and it is expected that the building lots will be speedily taken up.

Where the work is let by contract it is described in the manner common to most engineering works, viz. by plans, sections, and specification, which form part of the contract. These may be preceded by quantities of the work required for the guidance of contractors in estimating; or parties wishing to tender may be left to form their own estimate from the drawings and specification.

Specimens of plans, sections, specifications, and quantities of streets and sewers are appended, the two last having items included for different kinds of work which are not likely to occur on the same estate, in order to furnish as complete an example as possible. They may be found useful in preparing similar documents, or in cases where the work is done directly by workmen, without the intervention of a contractor, as explanatory of the pages descriptive of the work and materials required.

PLANS.

Plans show the general position, length, width, and direction of the streets, and the direction and sizes of the sewers, with the positions of the manholes, gullies, &c., belonging to them. Sufficient has been said in the pages dealing with sanitary regulations, and laying out on the plan, together with what follows respecting streets and sewers, to furnish all particulars likely to be necessary in the preparation of the plans (Plate III.).

LONGITUDINAL SECTION.

Having prepared a section of the surface of the ground from levels taken along the intended centre lines of the streets or roads, the next proceeding is to fix the formation lines.

Where the fall of the land is not too great, the formation line of streets may be drawn as nearly identical with the surface as is possible without making the alterations in gradient too frequent, so that the excavating and embanking required may be reduced to a minimum.

Where the streets cross a deep valley they will have to be embanked considerably above the level of the ground, and sometimes it may be necessary to fill up the whole of the hollow to a uniform level to fit the ground for building upon; but if the houses are to stand back in gardens, the level of the road may be kept considerably above or below the buildings.

When the line of street runs alternately above or below the surface of the ground, the section line should be so determined that the adjoining excavations and embankings may balance one another, and that the earth taken from the one may serve to construct the other.

A question for consideration in fixing the level of the street is whether the houses are likely to have cellars, because if so the street may with advantage be kept somewhat above the level of the adjoining land, and so effect a saving in the excavating required for the basement of the buildings. On the other hand, if the houses are to have no cellars, and there is a bed of clay upon the ground which is to be made into bricks, the section line may with advantage be kept below the natural surface of the ground.

Streets are best made nearly level or with a slight fall, so that the water may run easily off their surface; but where the contour of the ground necessitates steep gradients, care is necessary in determining what are the steepest gradients which may be allowed.

Telford assigned 1 in 30 as the ruling gradient which ought, as far as possible, to be adopted on a turnpike road. Occasionally, however, he found it necessary to introduce steeper gradients for a short distance, as 1 in 20 or 1 in 15.

Sir John MacNeil, in 1836, named 1 in 40 as the steepest gradient which should be allowed in a really good road, and this approaches so nearly an average of the deductions of other competent observers that it may be taken as a very safe guide for roads intended to receive any considerable amount of vehicular traffic.

The less important or cross streets on building land are frequently required, however, for little more than to afford means of communication for the residents therein, and if necessary a steeper gradient may be allowed, especially in short streets, which are sometimes made as steep as 1 in 10, though such a gradient cannot be considered as conducive either to safety or convenience.

When roads are to be taken over a railway, Parliamentary Standing Orders prescribe the following as maximum gradients, except where a steeper gradient exists within 250 yards of the point of crossing:—

Turnpike roads	.	.	.	1 in 30
Public carriage roads	.	.	.	1 „ 25
Private roads	.	.	.	1 „ 16

In determining the formation line, the questions of economy and efficiency must be considered *pro* and *con*.

CROSS SECTION.

The cross section of roads and streets is made slightly convex, in order that the water may run off to the sides and be carried along the channels into the gullies, but it is not advisable to give a road more convexity than is required for this purpose, as it obliges vehicles to take the centre, and thus concentrates the wear and tear in one place. Mr. Law recommends the section to be formed by two lines, inclined from the side to the centre at the rate of 1 in 30, these being united at the crown by the segment of a circle described by a radius of 90 feet. The curb-stones rise a few inches above the channels and the footpaths slope downwards from the houses. For further particulars and details of the requirements of sanitary authorities in these matters see the section devoted to that subject—("Jurisdiction and Regulations of Sanitary Authorities," and Figs. 1 and 2). When a road runs along the side of a hill the cross section line is so fixed that as far as possible what is taken from the upper side serves to form the embankment on the lower side. Where whole valleys are filled up, previous to laying out for building, great care must be taken that the material used in filling is not composed of objectionable refuse, fæcal, vegetable, or animal matter. Much difficulty may sometimes be experienced in carrying out this restriction, as not only is a sufficient quantity of mineral matter difficult to obtain, but a neighbouring hollow in course of being filled offers a convenient site for the purposes of people employed to cart away refuse of different descriptions from other quarters. The restriction, however, is of great importance, as, if the emptyings of ashpits or vegetable matters liable to decay are allowed to form part of the filling, noxious gases are sure to arise from

them, which are almost certain to be seriously detrimental to the health of the future residents in the area laid out.

Another important point is that the filled-up ground should have thoroughly settled before building operations are commenced. This can only be secured by allowing a sufficient time for a complete settlement, which may take two or three years, during which time levels should be occasionally taken across the area filled in, to ascertain whether any sinking is taking place.

In building upon filled-up, or as it is generally called, made ground, it is an advisable precaution to cover the site of houses to be erected with a layer of concrete six inches thick.

In all valleys there is sure to be a brook or water-course running along the lowest ground. Before filling in, a culvert of brickwork should be built near to its course at proper levels, and capable of carrying its largest discharge, into which when built the stream should be turned.

CONSTRUCTION OF STREETS.

We have observed that streets may either follow the surface of the ground, be excavated below, or embanked above it. Until the adjoining ground is built upon, an embankment or cutting should be finished off with a slope, suitable to the nature of the material and its angle of repose (Figs. 16 and 17).

If embanked or excavated, channels may be necessary at the bottom of the slope, to carry off the water running down the face of it into the natural watercourses.

All fences or walls crossing the line of street must be completely removed, and where the street crosses a

ditch or water-course provision must be made, by means of pipes or culverts, for carrying the water underneath the road into the sewers.

The formation level of the street should be left from 12 to 18 inches below the finished surface, to admit of a firm foundation being made.

The method of forming this foundation varies with the materials obtainable in the locality, and it may be composed of broken stones or bricks, burnt clay, furnace slag, cinders, gravel, sand, or any similar material which does not work up into mud under the action



Fig. 16.



Fig. 17.

of water. In the best work, however, the foundation is formed of concrete, or of a layer of rough stone. The concrete is composed of gravel, mixed with sufficient sand to fill up the interstices, to which unslaked lime or cement is added, in the proportion of 4 to 6 parts of gravel to 1 of lime or cement; after mixing sufficiently, water is added to effectually slake the lime, after which the whole is thoroughly mixed and quickly thrown into place, and trimmed into the required form.

For a stone foundation, rough quarry stones are picked of the required sizes and firmly packed together

by hand on the ground, in such a manner as to give the road the required rise towards the centre; the irregularities of the upper part of the stones are knocked off with a hammer and firmly packed into the interstices, together with such other small pieces of stone as may be necessary to bring the whole to an even surface.

We now come to the upper covering of the road, which may be either macadamized or paved. For macadamizing, hard stones, such as granite, whinstone, or basalt, are broken into angular fragments, which naturally cement themselves together under the pressure of traffic or of a steam-roller. The stone is broken into fragments to pass through a ring of $2\frac{1}{2}$ inches diameter, and laid on in two or three layers of 3 inches in thickness each. Sometimes gravel is used instead of broken stones, in which case it is necessary to add a small proportion of clay or other binding material.

Paved roads may be either paved with boulders or setts, the former being generally considered inferior to macadam, while the latter are used in the principal streets of large towns which are expected to bear a considerable amount of traffic.

Boulder stones are large irregularly rounded stones, which are obtained from the sea-coast, or gravel and clay pits, and are bedded in a layer of sand to form the roadway.

In sett paving, the setts, which are square stones about 7 inches deep and from 3 to 6 inches in width, are laid upon a bed of gravel or sand from 2 to 3 inches thick spread upon the foundation. The setts are laid in parallel courses from the side to the centre, and well rammed down with a heavy rammer, and a thin grouting of sand and lime or melted asphalte is

poured over the surface, and a thin layer of gravel spread over the top and packed into the interstices.

Boulder paving is to a considerable extent falling into disuse, though it has been doubted whether, if the same care were employed in forming a foundation, and selecting and placing the boulders, as is accorded to other kinds of pavements, the economy in the first cost might not in some situations outweigh its disadvantages.

The first cost of laying a macadam road is considerably less than sett paving, but where the traffic is heavy the annual cost of maintenance is very much greater.

The cost of street pavements varies so much according to the system adopted, the materials available and the distances from which they have to be brought, that it is almost impossible to give any figures which can be of any practical service. According to statistics from various quarters, the cost per square yard (including foundations) of boulder paving varies from 2s. 6d. to 5s., of macadamized roads from 2s. 6d. to 7s., and of sett paving from 6s. to 11s.; but this does not include the very expensive pavement sometimes laid for heavy traffic in the heart of large towns, which may reach as high as 20s. per square yard.

Before the road-making is commenced, curb-stones are laid on each side along the division line between the carriageway and footpath so as to serve as an abutment to both. They must be of hard stone about 6 inches wide on the top and 12 to 18 inches deep, the top surface being level with the footpath, and from 3 to 7 inches above the channel-stones (see notes on "Cross Section"), which are large flat stones laid with sufficient inclination to carry the water to the gullies. At the junctions of streets the curb and channel-stones are

laid on a curve struck with a radius about equal to the width of the footwalk.

The footwalk should rise outwards from the curb-stones with an inclination of an inch to the yard to allow the water to run off into the channels. The footwalks may be formed of gravel three inches thick, asphalt, or paved with pebbles, but in towns are generally flagged with large flat flag-stones 3 inches thick laid on the ordinary ground or on a bed of gravel or sand. The flag-stones are usually of sandstone obtained from the old red sandstone of Scotland, or from the lower carboniferous formations of Lancashire, Yorkshire, &c. The passages may be flagged in a similar manner, having a fall to a grooved channel with traps to carry off the water, and laid with sufficient inclination for that purpose. Where the passage runs between the gable end of one house and the yard wall of another, the fall to the channel should be away from the gable ends (Fig. 18).

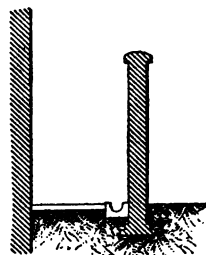


Fig. 18.

Crossings of large stone are laid from four to six feet wide to connect the footwalks of the principal streets where the cross streets enter them. They should be slightly raised above the surface of the roadway to keep them free from mud.

SEWERS.

Sewers are underground channels formed to receive and carry away, either together or separately—(1.) The surface water, regulated by the rainfall; and (2.) The refuse water from the houses, the quantity of which is in proportion to the water supply.

All existing public sewers are under the control of the sanitary authority of the district, whose duty it is to keep them in repair and to construct such sewers as may be necessary for effectually draining their district, and who can compel the owner or occupier of any house within their district to cause the drains to empty into any sewer belonging to them which is not more than 100 feet from the site of such house; or if greater expense would be incurred in draining two or more houses into an existing sewer than in constructing a new sewer, the local authority may construct such new sewer and apportion the expenses of its construction among the owners of the several houses.

If no public sewer exists within a reasonable distance, the sewage from the houses may be carried into cesspools and the surface water allowed to run into natural water-courses.

Allowing unpurified sewage to enter natural water-courses, except with the sanction of the local authority, renders any person so doing liable to prosecution under the Rivers Pollution Act, 1876.

When tributary sewers are constructed entering a public sewer the depth at the outfall will be restricted to the depth of such public sewer, and the inclination given to the tributary sewers should be such as will insure the sewage having a velocity of not less than from $2\frac{1}{2}$ to 3 feet per second.

Hurst's "Surveyor's Hand Book" gives the following figures as showing the fall to be given to cylindrical sewers flowing one-half full to insure a velocity of 3 feet per second :—

Diameter of Sewer.	Rate of Inclination.
4 inches	1 in 100
6 "	1 " 150
9 "	1 " 225
12 "	1 " 300
18 "	1 " 450

The *Building News* gives a much deeper rate of inclination as a safe fall for circular drains in order to render them self-cleansing, viz. :—

Diameter of Sewer.	Rate of Inclination.
4 inches	1 in 36
6 „	1 „ 60
9 „	1 „ 90
12 „	1 „ 200
18 „	1 „ 300

The inclination of the sewers is, however, regulated in great measure by the contour of the ground, being laid at such depths as not to entail unnecessary excavation, and to allow of a fall of about an inch to a yard for branch drains from the lowest parts of the houses requiring to be drained. Where the pipes are only required to carry away the surface water they may be laid only a few feet below the ground.

The sewers should be made of sufficient size to quickly carry away the maximum rainfall and water supply of the area to be drained. Pipes of 4 inches and 6 inches diameter are generally used to carry the sewage from the houses; 9-inch pipes will be sufficient for cross streets of moderate length emptying into 12-inch pipes and so on, increasing in size towards the dimensions of the public sewer into which they eventually fall; the pipes being laid underneath the streets and passages, with junctions to receive the house drains wherever required. Sewers of 2 feet diameter and upwards are built of brickwork in cement, but under that size are best formed of burnt fireclay or stoneware pipes with socket joints made watertight with tarred gaskin cement or clay.

Junctions must be laid to gullies fixed at every point in the road from which it ascends in each direction, at the junctions of the streets and at other intervals, if these points are very far apart, the gullies being so

fixed that each street effects its own surface drainage independently of those which it crosses or enters. Manholes to admit of entrance to clean the sewers may be placed at changes in their gradient, at the junctions

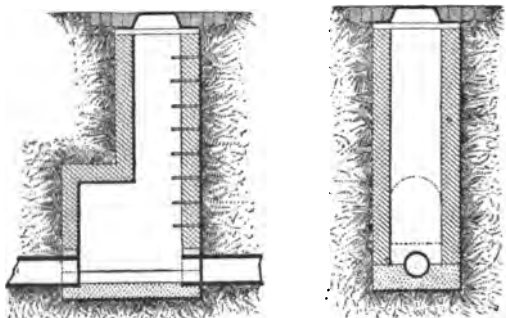


Fig. 19.

of sewers or other convenient points, and ventilating shafts at such intermediate points (generally about 100 yards apart) as the sanitary authority may direct. All junctions of branch drains should be curved in the direction of the fall of the sewer.

Gullies may be built of brickwork (Fig. 20), but are

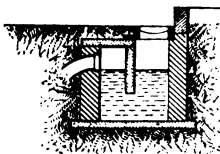


Fig. 20.

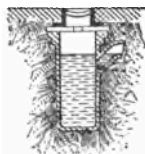


Fig. 21.

now generally cast in iron or stoneware (Fig. 21), and consist of a receptacle to catch the surface water, and allow the road detritus to deposit so as not to enter the sewer, the outlet being so arranged that the water standing in the gully forms a trap to prevent the sewer gas escaping.

Manholes are shafts, generally built in brickwork of sufficient size to admit of a man descending to inspect the sewer, the bottoms being built to the exact shape of the invert of the sewer, so that the sewage shall flow readily through the manhole from inlet to outlet (Figs. 19 and 22).

Ventilating shafts are formed of upright pipes 9 inches diameter, similar to those used in the sewer, and rising from them by a square elbow joint (Fig. 23).

Manholes, ventilating shafts, and gully boxes are

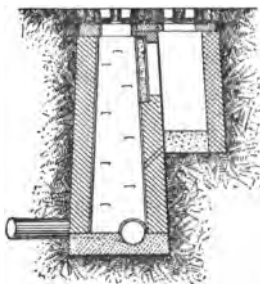


Fig. 22.*

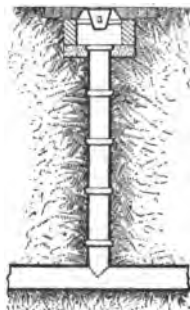


Fig. 23.

fitted with a hinge or removable iron cover level with the roadway.

The details of the sewers must be so designed as to meet the requirements of the local sanitary authority.

The usual course in laying out Building Estates is to agree with the sanitary authority, as previously explained with regard to streets, to adopt the sewers when completed to their satisfaction. Such sewers are then under the control of the authority, and are maintained by rates levied on the inhabitants of the district.

* Fig. 22 is reduced from "Suggestions as to Sewerage," by Robert Rawlinson, C.B.

PART III.

LAND TENURE.—AGREEMENTS, LEASES, CONVEYANCES,
&c.—SPECULATIVE BUILDING.—PRICES AND VALUA-
TIONS.—SUNDRIES (TITHES, BOUNDARIES, &c.).

Land Tenure.

PROPERTY in land or houses is usually described as Freehold, Copyhold, or Leasehold.

Freehold property is such as is held without owing rent or service to anybody, although it may be charged with various payments, as subsequently described.

An interest in freehold property may be an estate in fee simple, or an estate in tail ; in the former case the holder has uncontrolled powers of selling, devising, or otherwise disposing of the property, and if it should come into demand as building land may offer it as "freehold," parting with his entire interest therein to the purchaser.

A tenant in tail has the enjoyment of the estate during his lifetime, but at his death it passes in a stipulated line of descent which he may not alter ; neither can he, except as presently explained, sell the property, nor lease for a longer term than his own life.

The system of entails and settlements which gives rise to this form of tenure is the result of the desire of landed proprietors, common alike to the present and past times, to secure the continuance of their

estates intact in their own family, which where the law of entail does not operate to do so they effect by continually renewed settlements, with the result that most of the estates in the hands of the landed aristocracy are held in this manner.

Settlements, however, generally contain certain powers of leasing and selling where it appears to be for the benefit of all parties concerned, and it was enacted by the Leases and Sales of Settled Estates Act, 1856, that where such provision had not been made the necessary powers might be obtained from the Court of Chancery either to sell or lease for certain terms, which, in the case of building land, extended to 99 years. Previous to this selling powers could only be obtained by an Act of Parliament, though the heir-apparent to an estate on reaching the age of 21 could, with the concurrence of the tenant for life, bar the entail and unfetter the estate. But by the Settled Land Act, which came into operation on the 1st January, 1883, every tenant for life is enabled to sell the land which he holds for life, or any part of it (with small exceptions), without applying to any court or being subjected to any litigation upon the conditions that he must obtain the best price to be had, and that he must invest the purchase-money in approved securities for the benefit of those interested after him. The Act also contains provisions for leasing, for the appropriation of parts of the land for streets and open spaces, and for the application of the purchase-money for the making of roads and other improvements on the estate.

Although it would thus appear that except in rare cases there is at the present time no insuperable obstacle in the way of the sale of land in any part of the kingdom, the practical result of the system of entails and

settlements has been in the main to prevent the sale of the fee simple of land, and as those who have the power to sell may often prefer to retain an interest in the land by adopting the leasehold system, a large proportion of the land offered for building purposes can only be obtained for a term of years.

The purchaser of land offered as freehold becomes in his turn the tenant in fee simple, the land belonging to him and his heirs for ever, with full power of sale, &c.

Leasehold land reverts to the lessor at the expiration of the term of the lease, together with all buildings standing thereon, and can only be sublet for a term shorter than the unexpired term of the original lease, or assigned for the full unexpired term.

As a rule freehold land is sold in consideration of a lump sum paid upon conveyance, while leasehold is let at a rental paid yearly or half-yearly. Freehold is, however, sometimes sold subject to a perpetual ground-rent, and leasehold may be demised for a term of years in consideration of a lump sum paid upon the signing of the lease.

As it thus appears that a lease may be purchased, we shall for convenience in subsequent remarks upon the subject make use of the terms "vendor" and "purchaser" in speaking either of freehold or leasehold property.

Copyhold is a tenure derived from very ancient times when the vassals or villains were allowed to occupy or farm lands doled out to them by the lords or barons upon condition of rendering them certain services. As this privilege generally descended from father to son, it came to be recognised by law as a right in certain families equal to that

of the lord himself, and the services to be rendered were commuted into fines or periodical payments.

As at present held copyhold differs little from freehold property, except as to being subject to certain payments, either fines, quit-rents, heriots, &c., to the lord or lady of the manor. These payments differ on nearly every estate, but are usually small in comparison to the present value of the land. Certain Acts of Parliament have been passed during the present reign under which either the lord or tenant may compel the other to join in enfranchisement, so that sooner or later this form of tenure is likely to become extinguished and be replaced by freehold.

Agreements, Leases, and Conveyances.

In dealing with large estates, the sale of which in lots may spread over some years, it is usual only to fence off such portions as may seem likely to meet with early demand, the remainder continuing to be occupied as agricultural land.

As this land may require to be taken at any time, a clause should be inserted in the agreement under which it is held, stating that any portion of the land may be taken for building purposes, providing that proper compensation be allowed to the tenant for such taking in the form of a reduction of rent.

Two forms are given in the Appendix, the former suitable for insertion in a lease, and the latter in a yearly agreement, for agricultural land which is likely to be affected in this way.

SALE IN BUILDING LOTS.

Previous to retailing land in small lots, an accurate plan of the estate, showing the roads, streets, and build-

ing blocks, must be prepared to a scale so large that the dimensions and areas of plots may be correctly measured off on the plan. This plan serves for intending purchasers to fix upon the lots most suitable for their purpose, and each lot taken being correctly delineated as to position and extent upon the plan, constitutes a record of the land already sold and that remaining to be disposed of.

In sales of land a short period is usually allowed before the completion of the purchase to enable the purchaser to realise capital he may have otherwise invested, and to allow time for investigating the title, preparation of documents, &c., and in the case of building land payment is sometimes further deferred a sufficient time to allow of buildings being erected. (See arrangements with builders, under "Interest and Advances.")

When a contract is entered into for the sale and purchase of land, a preliminary agreement is drawn up detailing the principal features of the contract.

This agreement is prepared by the solicitor to the estate, though it will be the duty of the surveyor to frame certain clauses having reference to the special building conditions on which it is intended to grant the plot or plots, and to insert a correct description of the position, measurements, and boundaries of the land to be purchased.

A printed form may be adopted for use on the estate, having blank spaces left to be filled in with the names of the purchasers, description of the land, terms of payment, and other particulars, such agreement to be signed by the vendor or his agent, and by the purchaser, a witness attesting the signatures, and a 6d. stamp being affixed. The agreement should have a

plan drawn upon it taken from the map previously mentioned. (See Appendix—"Examples of Agreements.")

Previous to the completion of the purchase the ground is staked out, and in some cases built upon; a draft of the conveyance or lease is then prepared from the agreement by the solicitor employed by the purchaser, and submitted to the vendor's solicitor for approval, or the vendor's solicitor may be employed to act for both parties. If the land has been sold at a price per square yard, the surveyor may be called upon to correct the area by admeasurement on the ground, and to insert the corrected particulars in the draft.

Conveyances are made by a simple deed or writing on parchment, signed, sealed, and delivered, detailing the names of the vendor and purchaser, with a recital of the vendor's title, and a contract for the purchase; the consideration-money to be paid for the sale, and the acknowledgment of the receipt of the money in exchange for the land. Then follows the conveyance of the property, with such limitations as may form the subject of the contract, with covenants entered into by the vendor that he has a right to sell and convey the land, that the purchaser shall have quiet enjoyment of the land purchased, and that finally the vendor will do other acts necessary to more effectually vest the land in the purchaser.

A building lease differs from a conveyance in being for a term of years, and provides for the payment of the rent reserved and the maintenance of the buildings as security for the same; and as the land in reverting to the lessor at the end of the term carries with it the buildings standing thereon, clauses are inserted not generally necessary in conveyances as to the insurance

of the buildings, reconstruction in case of damage, keeping in suitable repair, and the right of lessor or agent to examine from time to time the condition of the buildings, and for the peaceable yielding up of the premises at the end of the term. (See "Agreement for Lease," clause 2.) The indenture is prepared in duplicate, one being retained by the lessor and the other by the lessee, and in this and some other particulars a conveyance of a freehold on ground-rent resembles a lease.

A plan of the lot similar to that attached to the agreement should in all cases be endorsed upon the deed, and duplicate, if any.

TITLE.

The question of Title, being a purely legal one, will be very briefly noticed. An abstract of the documents vesting the property in the vendor as far as may be considered necessary is generally handed to the purchaser upon signing the agreement, and it is stipulated in the agreement that any further investigation shall be at the expense of the purchaser.

It is of great importance that the title to land offered in building lots should be known to be such as may be safely accepted by a purchaser, as nothing retards the disposal of otherwise eligible land more than a doubt existing as to the security of the title.

Under certain circumstances the title to land can be registered, and an indefeasible title obtained, after which the land may be transferred from vendors to purchasers, whether sold as a whole or in numerous lots, with little more trouble than is required in the case of consols or railway shares.

BUILDING COVENANTS.

Building Covenants are inserted in agreements, leases, and conveyances :—

1st. To provide for the erection of premises of sufficient value to secure payment of ground-rent, or interest on deferred payments.

2nd. To prevent the erection of buildings which would be detrimental to the remainder of the estate.

3rd. To secure uniformity in the lines of the streets and houses.

4th. To provide for the making of streets and sewers, or for payment of due proportion of any work done in regard to same by the owner of the land for the benefit of the whole estate, or for payment of any charges to which the owner may become liable to the sanitary authority in respect of the plot sold.

The erection of buildings as security becomes necessary where the land is leased or sold subject to ground-rent, or where the purchase-money is allowed to remain at interest for a lengthened period.

Where a vendor sells the fee simple of his entire estate he is not likely to care what use may be made of it, but where he parts with it in small portions he will be anxious to prevent those portions being put to any use which will be likely to decrease the value of the remainder, and although, as has been explained, the vendor of the fee simple parts with his entire interest therein, this does not debar him from inserting covenants to prevent the land being used for purposes other than those for which it is sold.

This object is generally attained by clauses requiring the houses to be of a certain annual value, detached or semi-detached, or having a certain frontage, and stipulating the principal dimensions, and describing some

of the architectural features, or by requiring plans and elevations to be submitted to and approved by the agent or surveyor to the estate.

Clauses may also be inserted in the agreement debarring the purchaser from erecting manufactories, business premises, or houses for the sale of intoxicating liquors, &c. With regard to these matters the agent must be guided by the locality, the class of tenants, and similar considerations. Thus, as previously remarked, a mill or factory usually gathers about it a cluster of cottages for the people employed therein, and so far from being considered an objection, land is sometimes offered cheaper for the site of such buildings with the view of increasing the demand for other portions of the estate; but such a building, especially if used for any offensive trade, would be greatly detrimental to the prospects of an estate laid out for villa building, and if land has been sold for this purpose with a clause prohibiting works, &c., it is only fair to the purchasers that the same restriction should be in force in all parts of the estate in which they would be injuriously affected by a departure from it. (See "Freehold Agreement," clauses 9, 10; "Leasehold Agreement," 4.)

Uniformity may be secured by fixing certain building lines, requiring the houses to be set back from the line of street, and prescribing that the space between the house and street shall be used only as ornamental garden ground, surrounded by wall or railings of approved pattern.

With regard to the forming of streets and sewers, most of the work is usually done by the sellers, as it would be inconvenient for the purchasers of several lots fronting one street or road each to make his own portion. The cost is therefore apportioned among the several



lots, each according to his frontage, or an extra price is put upon the land; sometimes part of the work is done by the local sanitary authority, as explained in another section, and the cost recovered from the owners for the time being. In any case, where the matter is not settled at the time of drawing out the agreement, lease, or conveyance, clauses must be inserted explaining the arrangement it is intended to carry out. (See "Freehold Agreements," clauses 4 to 8; "Leasehold," 5.)

INTEREST AND ADVANCES.

It has been mentioned that in the case of building land a further time beyond the usual allowance for investigating title, realising investments, &c., is sometimes allowed before the completion of the purchase. The object of this is to facilitate the disposal of the lots by assisting and encouraging builders who may not be in a position to pay the purchase-money for the land and build houses upon it before receiving any return.

Where land is let on building leases in consideration of a ground-rent, the builder is only liable for a rental, and in order to place freehold property on equal terms in this respect, it is often arranged that the purchase-money, or part of it, may remain at interest for a certain time, so as to enable the builder to sell, let, or obtain a mortgage upon the houses erected before payment of the balance, or that the purchase-money may be paid by instalments, the unpaid portion bearing interest.

On both freehold and leasehold estates it is frequently arranged that the interest or rental of the ground shall not commence until time has been allowed for the houses to be built, and to be producing a rental; and sometimes arrangements are made whereby portions of

the land may be conveyed from time to time to third parties at a price per yard not less than that agreed upon for the whole, the residue of the purchase-money being paid within a stipulated time; and further, on some estates it is customary for the seller to advance money at moderate interest to builders upon the security of the buildings they erect upon the ground. In such cases the surveyor to the estate generally prepares a valuation of the houses proposed to be erected from plans submitted to him by the purchaser, and it is agreed to advance a sum based upon this valuation, as two-thirds or three-fourths of the total value. The money is then advanced in instalments as the work proceeds, the surveyor inspecting the buildings at due intervals and certifying the value of the work done.

When the houses are completed the builder may sell or obtain a mortgage upon them, enabling him to pay off these advances and interest; but in the event of his failing to complete the works or to comply with the terms of the agreement, the houses become the property of the landowner.

On estates where it is proposed to make these advances the agreements must contain clauses stipulating the time in which the houses are to be completed, so as to afford security for repayment, and specifying the legal remedies to be adopted in the event of default. (See "Leasehold Agreement," 7—9.)

Two examples of forms of agreement are given in the Appendix, the former for use on a freehold estate and the latter on a leasehold. In order to illustrate the preceding remarks as far as possible, the freehold is drawn up with a view to the erection of cottage property and the leasehold of villa residences. The latter also contains provisions for a separate lease of each

house being taken if required, and arrangements for advances to be made to the builders as the work proceeds, if required.

The Leasehold System, Speculative Building, &c.

Comparisons are frequently drawn between the class of houses erected at the present day and the more substantial structures which remain to us from a century or two back, and the unsatisfactory character of much of the building of to-day, together with many evils more or less evidently resulting therefrom, is charged to the "leasehold system." And so strongly has this been felt, that a bill has just been introduced into Parliament to be known, should it become law, as the Leasehold Enfranchisement Act, which proposes that every person who shall be entitled to a term of which more than thirty years is unexpired if created before the Act, or more than twenty years if created after the Act, in any house or cottage, with land, &c., held therewith, and not exceeding three acres, may apply to the county court of the district and acquire, subject to the provisions of the Act, the fee-simple of such house or cottage by purchase.

That the leasehold system is entirely responsible for all the evil with which it is charged does not always appear from a comparison of the houses erected on adjoining leasehold and freehold estates, the building restrictions enforced on the former as security for ground-rent often causing the latter to be chosen by builders intending to erect the poorest class of property. The fault seems rather to lie with the present system of "speculative" or "jerry" building, though how much of the growth of this system may be owing to leasehold tenure is another question, which it would

be outside our present purpose to discuss, though it may be worth while to notice briefly the principal features of the present system as a whole.

The bulk of the population of towns, either from inability to find the necessary capital or from the uncertainty of remaining very long in one place, instead of either building or purchasing their dwellings prefer to set apart a portion of their incomes in the form of rent, paid weekly, monthly, yearly, or otherwise as the case may be.

House property thus forms a suitable investment for capitalists, who derive their interest in the form of rent, and build or buy houses with the intention of letting them.

In large towns the demand for this class of investment is so far regular, that a class of builders, commonly known as "speculative" or "jerry" builders (though there is no absolutely necessary connection between the terms), erect large quantities of houses with the intention of selling them as soon as built.

Now it will be readily imagined that the tenant is not so much concerned as to the number of years his house is likely to stand as with the accommodation he can obtain for a certain rent, since, if the house can be kept in tolerable condition for the term he occupies it, he can remove to another house when circumstances render it advisable to do so.

The landlord or purchaser of the property has, indeed, much more reason to be anxious to secure a substantial property which will not be continually requiring repair; and, if the property became absolutely his own to be transmitted to his children after him, would probably refuse to look at any other; but as the houses revert to the lessor at the end of a certain term and rapidly decrease in value as that term approaches its

expiration, he pays more attention to the question of their proving a paying investment during the time they remain on his hands, and looks chiefly at the rent which can be obtained in return for a certain sum invested; and, as a poorly-built house can be obtained cheaper than a well-built house having the same accommodation, and will probably fetch the same rent, frequently chooses the former.

As the only object of the builder is to sell his houses as soon and for as good a price as possible, he is more inclined to pay attention to producing the appearance of a good house than the reality, especially if he finds purchasers usually guided by such considerations as have just been mentioned.

Lastly, as leasehold land may be obtained without immediate outlay, on consideration of a ground-rent, which (as has been mentioned) does not usually commence till the buildings are erected, and, as we have also seen, freehold land is often brought into pretty much the same category by systems of deferred payment, and as, moreover, a good proportion of the building materials can be obtained on credit, and advances procured as the work proceeds, a great inducement is offered to unscrupulous persons with little capital to embark in building speculations, trusting, if they are successful, in finding a ready sale for their property to clear off their liabilities and secure a margin of profit for themselves; while, on the other hand, if matters should not take so favourable a turn, the loss does not fall on them, but on the unfortunate individuals who have trusted them.

The financial difficulties in which this class of persons frequently find themselves involved is not favourable to the erection of substantial and well-finished houses;

and though restrictions in building agreements and the exercise of powers vested in sanitary authorities may to some extent check the evils which would otherwise arise, they are not often entirely adequate to cope with the varied shifts and expedients which the ingenuity of the "jerry" builder is capable of devising.

Prices and Valuations.

In valuing land or buildings there are two points to be considered, viz. :—

1. The annual value.
2. The capital value.

The annual value is the amount, clear of all deductions, which is derived from the premises in the form of rent, or the amount which it is estimated they should yield if let at a yearly rental.

The capital value is represented by the sum which it would be necessary to invest to realise such annual income at a rate of interest determined by the nature of the security offered by the class of property in which the money is to be invested.

The capital value is estimated at a number of years' purchase of the annual value, greater or less, in inverse proportion to the amount of interest expected from the investment; the number of years' purchase of freehold property being found by dividing 100 by the number of pounds per cent. which the investment should yield.

Thus freehold property, if expected to yield

2 per cent. would be worth 50 years' purchase			
3	"	"	33 $\frac{1}{3}$
4	"	"	25
5	"	"	20
6	"	"	16 $\frac{2}{3}$
7	"	"	14 $\frac{2}{7}$
8	"	"	12 $\frac{1}{2}$
9	"	"	11 $\frac{1}{3}$
10	"	"	10

The capital value of leasehold property may be calculated from the annual value by means of certain tables which will be subsequently explained.

The following table shows the interest usually obtained for money invested in certain classes of property, and the number of years' purchase of the annual value which must be given to secure that rate of interest:—

	Interest.	Years' purchase
Agricultural land . . .	3—3½ .	33—28
Building land (unsecured) .	5 .	20
Ground-rents (fully secured) .	4—4½ .	25—22½
Freehold houses—Superior .	4—6 .	25—16
„ „ Inferior .	7—9 .	14—11
Leasehold houses—Superior .	5—7 .	{ According to Tables.
„ „ Inferior .	8—10 .	

The rental of agricultural land, though subject to considerable fluctuations, is yet sufficiently constant to admit of some classification, according to description and locality, from which the average value may be ascertained; but the annual value obtainable for land occupied by buildings is altogether so dependent upon local circumstances, that it is difficult to furnish any data from which even an approximate estimate can be formed.

Although, previous to being opened out for building, an estate had only yielded a moderate return as agricultural land, this would form no criterion as to the prices which might be obtained for building purposes, which would depend upon altogether different considerations from its productive value, the fact of the land having a prospective value as building land at all, giving rise to speculation as to the profits likely to be realised by its development.

Otherwise, the retail value as building land might be easily ascertained by adding to the agricultural value the cost attending development and the profit desired,

and apportioning the amount according to the area of the several plots.

This method can be applied where the price is known at which the land has been or can be bought in large quantities, by adding thereto the cost of opening out, forming roads, &c., legal charges, interest on capital during realisation, expense of management, and profit desired, and apportioning the total amount among the several plots according to their relative value, or conversely if the price were known at which similar building plots were being sold in the neighbourhood by calculating on that basis the total receipts, and making the proper deduction therefrom for the several expenses, an estimate might be formed of the price which it would be advisable to give for the land in bulk.

The rental value of building land is theoretically determined by the amount which buildings erected upon it would yield in rental above a fair return upon the cost of the buildings themselves; for instance, the large profits to be obtained from business carried on in premises in the centre of the metropolis and other large towns, causes a rental to be readily given for their occupation which is far in excess of the amount which would represent a fair interest on the cost of the buildings. This increase in rental value being entirely due to the situation may be said to belong to the land, and be valued according to the area, or to the frontage to certain streets, at so much per square yard or so much per lineal foot of frontage.

The capital value being increased in proportion to the rental value, when circumstances, such as town improvements, the pulling down of old properties, or other causes bring into the market plots occupying such central situations, there is hardly any limit to the

value which speculation may lead investors to attach to special sites.

Thus, it is stated in Tarbuck's "Handbook of House Property," "Land in the City of London practically never deteriorates in worth. It is thirty times the price it was two centuries ago; in some positions it has increased fourfold and more within ten years, and rates between £200,000 and £500,000 an acre are common. Many years back the triangular isolated ground between St. Paul's and Cannon Street was valued at £60,000, or £250,000 per acre. A piece of land in the Poultry sold for £20 per superficial foot; even twice this rate has been obtained, and £30 is not a rare figure. In Cornhill the rent of some land involves capitalization at above £1,000,000, and a site was purchased in Lombard Street at the rate of over £2,000,000 an acre."

Similarly, land adjoining a new street opened out in the heart of Liverpool was sold in 1879, upon a lease for seventy-five years, at prices ranging from £20 to over £30 a square yard.

Turning to private dwelling-houses, we find their rental to vary nearly as much with the situation as with the accommodation provided, the demand for a large number of dwelling-houses within reach of a large town causing a corresponding increase in the rental obtained for houses so situated. As in the case of business premises, the extra rental above what would pay for the cost of buildings would properly belong to the ground. Thus, if £30 per annum would be a fair return upon capital invested in houses which yielded in rental, clear of all deductions, an income of £35, the excess of £5 would attach to the land, and while the demand continued land similarly situated would fetch a ground-rent approximating to that sum, from which

the capital value could be ascertained, as previously explained.

It is usually considered that money invested in freehold building plots unsecured by buildings should yield 5 per cent. interest, or, in other words, the land is worth twenty years' purchase of its annual value; and as land is sometimes sold in consideration of a rental, and sometimes for a lump sum, the price is often quoted at the annual or capital value indiscriminately. Thus the same plot may be said to be worth 3d. a yard or 5s. a yard; in the former case the sum having reference to the ground-rent, and in the latter to the purchase-money.

The subjoined table shows the corresponding values of land at various prices, expressed in yearly ground-rent per yard, and capitalised at twenty years' purchase, per yard and per acre:—

TABLE
SHOWING THE PRICE OF LAND PER YARD ON ANNUAL GROUND-RENT
CAPITALISED AT 20 YEARS' PURCHASE, AND THE EQUIVALENT
PRICE PER ACRE.

Ground-rent per yard.	Capital value per yard at 20 years' purchase.	Capital value per acre.	
d.	s. d.	£	s. d.
$\frac{1}{4}$	0 5	100	16 8
$\frac{1}{2}$	0 10	201	13 4
$\frac{3}{4}$	1 3	302	10 0
1	1 8	403	6 8
2	3 4	806	13 4
3	5 0	1210	0 0
4	6 8	1613	6 8
5	8 4	2016	13 4
6	10 0	2420	0 0
7	11 8	2823	6 8
8	13 4	3226	13 4
9	15 0	3630	0 0
10	16 8	4033	6 8
11	18 4	4436	13 4
12	£1	4848	0 0

Leasehold land is inferior to freehold in annual value, inasmuch as the land with all buildings thereon reverts to the lessor at the end of the term. Hence though the lessee might obtain from the occupier of houses built upon leasehold land the same rent as if the property were freehold, yet he could not afford to pay the same ground-rent, as, if he did not wish to lose his capital at the end of the term, he would require to lay by such a sum annually as would accumulate at interest to the amount he had originally expended upon the buildings.

The amount which it would be necessary to put by annually, to realise any given sum, can be found by reference to Table I. in the Appendix.

Example.—A man expended £500 in building a house upon land, leasehold for 75 years; what sum must he lay by annually at 6 per cent. to replace that amount at the end of the term?

Opposite 75 years in the 6 per cent. column we find £·0007, which multiplied by 500 gives seven shillings as the amount of the annual sinking fund.

To purchase the lease of a plot of ground, and erect a house on it, practically amounts to the same thing as buying the lease of the entire premises at a price equal to the price paid for the land added to the cost of the house, or, in other words, to the purchase for a term of years of an annuity equal to the rent of the premises, clear of all deductions for taxes or other annual charges. The second Table in the Appendix shows the number of years' purchase of the clear annual rent, for various terms of years, which must be paid in order to secure a given percentage and get back the principal, supposing that the sinking fund is invested at the same rate of interest as the purchase-money.

ing that the necessary documents shall be prepared by the vendor's solicitor at the purchaser's expense.

An extract is given in the Appendix from the General Order made in pursuance of the Solicitors' Remuneration Act, 1881. As there are several exceptions and explanatory clauses contained in the order, the exact bearing of some of which are at present the subject of controversy between members of the legal profession, the figures are only given as an assistance in forming an approximate estimate of the probable costs attending land transfer.

The duties affecting this subject fixed by the Stamp Act, 1870, are also given in the Appendix; also the surveyor's charges for plans, under the head of "Professional Charges."

LAND OCCUPIED BY STREETS, PASSAGES, &c.

It must be remembered that although only the land bounded by the streets and passages is actually appropriated by the buildings, that taken up by the streets and passages is necessary to them, and of equal value, and if the land is not measured to the centres of such streets and passages an increased price must be put upon the net area.

Some owners prefer to convey to the centre of the streets and passages, so as to relieve them from any responsibility in regard to the cost of street completion, or charges which may be made by the sanitary authority on this account.

PAYMENT FOR MAKING STREETS AND SEWERS.

Custom varies on different estates as to the charges for forming and completing the streets and sewers. In some cases they are borne by the vendor, and an

increased price charged for the land ; on other estates the preliminary cost of laying out, excavating, embanking, and forming is borne by the vendor, but the cost of sewerage, flagging, paving, and completing is charged to the purchasers. To do this fairly the cost of a whole street is calculated and divided by its length, and the cost apportioned among the various purchasers according to their respective frontages. In some places the completion of the streets is left to the sanitary authority, as previously explained, who apportion the costs among the owners at the time the work is done.

Corner plots may be of only equal value, or of much greater value than other plots, according as they offer suitable sites for business premises ; if the land is sold to the centre of the streets, the extra quantity (half width of two streets) and the expense of paving same, may balance any advantage, or sometimes more than do so, so that it is necessary to make some allowance in order to dispose of the corner plots. Usually only one frontage, the longest, is charged for the sewer.

As mentioned under the heading of "Streets and Sewers," the expenses attending street-making vary greatly, not only according to the materials employed, but also for the same class of work in different localities and under varying circumstances, so that for forming and completing the sewer, roadway, and foot-path of a street 36 feet wide the apportioned cost may range from 10s. to 30s. per foot frontage on each side of the street. Frequently the owners of an estate pay the entire cost and make a regular average scale of charges per foot of frontage all over the estate, which can easily be ascertained on inquiry by an intending purchaser.

VALUATIONS FOR ADVANCES.

A frequent duty of the surveyor, either for the purpose of regulating advances made by the landowner, or for the guidance of private parties, building societies, &c., advancing upon mortgage security, is the valuation of the houses built upon an estate.

This is effected by measuring either the cubical content or floor area of the houses, and fixing a price thereto, which local experience teaches is sufficient for the class of house to be erected.

The cost of building materials and labour varying in different localities, these prices necessarily vary with them. The following figures, taken from the *Building News* of 20th September, 1878, are given as indicating a probable average, though for the purpose of advances upon speculative building they appear rather high:—

Cottages, 4d. to 6d. per cube foot.

Sheds, offices, &c., 3d. to 4d. per cube foot.

Small houses or tenements, 6d. to 7d. per cube foot.

Suburban villas of ordinary size, 6d. to 8d. per cube foot.

It is frequently required to value the houses as finished in the first instance from plans, and afterwards to value the work from time to time as it proceeds in proportion to the total; for this purpose the following figures may be taken as a guide:—

Brick and stonework finished and joists fixed . . .	$\frac{1}{4}$	of total cost
Roof finished, slating pointed, ceiling joists fixed and yard walls built	$\frac{1}{2}$	„
Partitions framed, floor boards laid, sash frames and stairs fixed, and ready for plasterer	$\frac{3}{4}$	„
Plastering done, chimney-pieces and hearthstones fixed, skirtings, casings, and architraves fixed . . .	$\frac{4}{5}$	„

The foregoing can of course only be taken as an approximate guide in view of the difference of the

proportion of the various artificer's work in houses of different classes and construction. If, however, the total valuation is correct, a slight discrepancy in one advance may probably be set right at the next. Practically, all payments made as the work proceeds should be kept well within the value, but if for any reason special exactness is required a rough measurement or valuation of the works executed must be made.

COMPULSORY SALE.

Where powers have been obtained by public bodies, railway or other companies, under special and general Acts of Parliament for the compulsory acquisition of lands required for their purposes, compensation may be claimed not only for the land actually taken, but also for damage sustained through severing or otherwise injuriously affecting the property which remains with the seller, as when the frontage or mode of access is interfered with, as well as for damage which may be likely to arise after the permanent works have been erected, such as the probability of the land being flooded, through the works interfering with natural means of outlet.

To ascertain and illustrate these points a plan of the mode of laying out should be prepared, showing in what manner the new works will affect the direction of the streets and their drainage, where bridges or arches will be required to provide necessary communication, and also what portion of the land may be rendered quite ineligible for building purposes.

When a corporation or local board acquires land for the purpose of widening a road, the question often arises whether such land is to be valued as front or back land, as though the land taken is actually front land, it

leaves the land immediately adjacent in the position of front land possibly improved by the extra width of the road. The real point to be considered appears to be in what manner the proposed widening will affect the land in its entirety, as whether there is still sufficient depth to utilise the frontage.

In all cases of this nature it should be clearly understood who is to bear the expenses of paving and completing the extra width of roadway.

Ten per cent. is usually added for compulsory sale to the price of land valued as building lands.

Sundries.

BOUNDARIES.

The question of boundaries assumes a position of considerably more importance when land attains to the value of building land than when occupied as agricultural land, and in preparing a plan of land for building purposes, the relative position of the fences and ditches should be carefully marked upon it.

If the contrary be not proved by plans or evidence, it is usual, where the boundary is formed by a hedge and a ditch, to consider the owner of the field on which the hedge stands to be the owner of the ditch, on the reasonable supposition that the bank is raised from the cutting of the ditch (which the original encloser would not be allowed to take out beyond his own boundary), but as from the action of the weather, the trampling of cattle and other causes, the present edge of the cutting is not likely to be the original line, it is usual to allow three or four feet from the fence according to local custom.

Posts and rails of paling are presumed to stand

wholly on the owner's land, with pales outward and nails driven home.

Where a stream flows between properties, the presumptive boundary is the central line of the water, use of which is shared between opposite owners, neither being entitled to injuriously affect the other, or proprietors above or below, by obstructing, diverting, diminishing, or polluting it.

In the case of walls, production of plans or evidence of having built or kept in repair, might establish the right to ownership of the land, otherwise the centre of the wall would be taken as the boundary. In the case of several houses built in a row or terrace, the walls dividing the houses are generally termed "party walls," and form the subject of several clauses in the Metropolitan and other Building Acts. Where lots are sold for the erection of such houses, a clause should be inserted in the agreement reserving for the purchasers of adjoining plots the right of building into or upon the end walls upon certain conditions (see "Freehold Agreement," clause 12), such walls then to become party walls. It is usual in building a block of street houses to project the footings of the end walls on to or under the adjoining land, the purchaser of such land making use of or cutting away such footings when he commences building operations.

TITHES.

Tithes, originally a payment in kind of one-tenth part of the produce of the land, payable to the rector or vicar of the parish (or if sold out of the church to the lay impropriator), were commuted by an Act passed in 1836 into a half-yearly tax, varying with the average price of corn for seven preceding years, payable by the

occupier of the land, and recoverable by distress on the land to the extent of two years' arrears.

When land subject to tithes is divided into plots for building the only legal course is for the tithe owner to collect the rent-charge from any part of the land, he having no right to constitute himself an apportioner. As this might entail great inconvenience on the purchasers or occupiers of houses on separate plots, it is convenient for the owner of land laid out for building upon, to redeem the tithe rent-charge as hereafter described, or to enter into a contract with the purchasers of plots that he will pay the rent-charge until it is redeemed.

When this is not done it rests with the owners of the various plots to avail themselves of the powers which the Tithe Commutation Act affords, either to effect an altered apportionment of the rent-charge, or to relieve the land altogether from the charge by redemption.

Where the tithe rent-charge does not exceed 20s. the owner either of the land or of the rent-charge may move for the redemption of such charge, with the consent of the Tithe Commissioners, at 25 years' purchase upon the original apportionment; or if the rent-charge exceeds 20s., redemption may be effected upon the joint application of the owner of the land and the person entitled to the rent-charge.

Thus the owner of a house built upon part of a field, subject to a tithe rent-charge of 20s. per annum, would be liable to be called upon to pay the whole sum, having power, however, to recover a fair proportion from the joint owners of the field.

To avoid this inconvenience, he might, however, apply to the Tithe Commissioners either to order the redemption of the rent-charge, or to apportion it among the

several owners, the expense in either case being charged amongst the owners.

ENCROACHMENTS.

By the Real Property Limitation Act, 1874, which came into operation on the 1st of January, 1879, the term during which persons may lose their title to land in consequence of neglect to assert their rights, and consequently the term during which persons may acquire a prescriptive title to land, in consequence of having remained in undisturbed possession of it (otherwise than by actual fraud) is now twelve years.

The owner of an estate in course of being disposed of in building plots, should make occasional inspections to see that vacant pieces of ground are not being made use of without permission, and that none of the purchasers or lessees encroach beyond their proper boundaries, or put out windows, open doors, &c., upon adjoining land which it is intended to build upon, lest a prescriptive right might be acquired in them to the injury of the value of the adjoining land.

It is usual in describing the lands bounding property sold to insert the words "intended to be built upon, up to the land hereby conveyed (or leased)," so that there may be no room for misapprehension upon the point.

LAND TAX.

Land Tax is charged by a yearly assessment made by an *equal pound rate* on all such lands within a parish as are of the annual value of twenty shillings and upwards. The total amount to be raised in each parish is fixed by an Act of Parliament passed in the year 1798, by which the tax was made perpetual, subject to redemption, the quota to be raised in each parish

being only varied by the redemptions which may from time to time be effected.

The price of redemption was fixed by this Act at the purchase of so much stock in the Three per Cents. as would yield a dividend of one-tenth more than the amount of tax to be redeemed, but this amount has been since reduced by $17\frac{1}{2}$ per cent. When land intended to be offered for building is liable to Land Tax it may be advisable to redeem the tax so as to avoid re-assessment at improved value.

PART IV.

APPENDIX.

CLAUSES FOR INSERTION IN LEASE OF, OR YEARLY AGREEMENT FOR, AGRICULTURAL LAND LIKELY TO BE REQUIRED FOR BUILDING.—FORM OF AGREEMENT FOR SALE OF FREEHOLD BUILDING PLOT.—FORM OF AGREEMENT FOR A BUILDING LEASE.—SPECIFICATION OF STREETS AND SEWERS.—QUANTITIES FOR STREETS AND SEWERS.—TABLE FOR THE PURCHASING OF LEASES, ESTATES, OR ANNUITIES FOR TERMS OF YEARS CERTAIN.—TABLE SHOWING THE ANNUAL SINKING FUND TO BE SET APART TO PROVIDE £1 AT THE END OF ANY GIVEN NUMBER OF YEARS.—SOLICITORS' FEES.—STAMPS.—LAND AGENTS' AND SURVEYORS' CHARGES.

Clause for Insertion in Leases of Agricultural Land.

And also except and reserved to the said lessor, his heirs and assigns, the right at any time during the continuance of the said tenancy to enter and take any part or parts of the said demised premises that he may require for the construction of any railway or road, or for building, exchange, or any other purpose, the said lessor, his heirs, or assigns being bound in any such event to make a proportionate abatement in the rent in respect of the part or parts of the premises

of land, situate the
 dimensions and boundaries whereof are particularly
 mentioned and specified on the plan hereupon drawn,
 containing in the whole superficial
 square yards, at the price of shillings and
 pence per superficial square yard, and amount-
 ing to the sum of £ .

The above contract is on the following conditions:—

1. The purchase-money shall be paid on or before
 the day of , 18 .

2. From and after the said day of 18
 until the payment of the purchase-money, the pur-
 chaser shall pay interest thereon after the rate of five
 pounds per centum per annum by equal half-yearly (or
 quarterly) payments, on the
 in each year, the first payment to be made on the
 day of , 18 , which shall be of
 all interest due at the rate aforesaid to that time ; and
 all interest shall be considered to be in the nature
 of ground-rent, and the vendor shall be at liberty from
 time to time to distrain for the same.

3. A footwalk of feet wide shall, to the satisfac-
 tion of the vendor, be made by and at the expense of
 the purchaser and by him flagged with new flags of not
 less than three inches thick, and suitable side stones
 set at the side thereof.

4. One-half of the street marked on the said plan
 shall be formed and paved and kept in repair by the
 purchaser until taken by the sanitary authority of the
 district into their own management, so far as such
 street is co-extensive with the plot sold.

5. The purchaser shall pay a fair proportion of the
 expense of any sewer now made, or which the vendor
 may think necessary to make, in or through any por-

tion of the said plot of land so far as such sewer is co-extensive therewith, such proportion to be settled by the vendor's surveyor, whose decision shall be final and conclusive.

6. The vendor shall be at liberty to do any work connected with the streets and footpaths above required to be done by the purchaser, and the purchaser shall be liable to him for the expense incurred of and incident thereto, as well as of and incident to any such works which may have been done by or at the expense of the vendor prior to the execution of this contract.

7. If any sewer shall be made or the carriage-road of the said street shall be formed, paved, channelled, and completed, or the footpath formed and paved or flagged by the Sanitary Authority for the district—and for the purpose of such sewerage, forming, paving, channelling, or flagging the vendor shall be treated as the owner of the plot of land hereby contracted to be sold—the purchaser is to pay on demand a fair proportion of any apportionment of private improvement expenses, which may be settled by the surveyor to the said Sanitary Authority as due from the vendor.

8. The purchaser shall keep in repair and cleanse the said footpath and one-half of the carriage-road adjoining until the said road shall be adopted by the Sanitary Authority, and declared to be a public highway or street.

9. The purchaser shall build upon the said plot before the day of 18 with brick or stone, slate, and other good materials, good and substantial dwelling-houses of not less annual value than £ each, and buildings erected on such plot shall have the fronts in such line and thresholds of such

level as may be fixed upon by the vendor or his surveyor.

10. The buildings shall be at least 21 feet high from the threshold to the eaves, and shall not comprise in such height more than two stories, and shall be at least 15 feet in width in front, and shall be built in conformity with the bye-laws issued by the Sanitary Authority for the district. All corner houses shall have hipped roofs, and all houses shall be finished with stone door cases, cornices, steps, window sills, and heads. No building shall be used as an inn, ale or beer house, or licensed victualler's premises, without the consent in writing of the vendor. No building shall be used for any purpose which may cause more smoke than a common dwelling-house, or any disagreeable smell, or which may be considered by the vendor as inconvenient, noisy, noisome, or detrimental to the neighbourhood, nor shall any cellar be inhabited as a separate dwelling, and no cellar holes, steps, or projections shall extend farther into the footpath than 18 inches, and all cellar holes shall be guarded by iron bars even and at right angles with the footpath.

11. The purchaser shall fence off the plot immediately on taking possession of the same.

12. The privilege of building into or upon gable-end and boundary walls is reserved for adjoining purchasers, on condition that they pay to the purchaser on availing themselves of this reservation one-half the cost of such walls to the extent used (which shall then become party walls) and make good any damage they may occasion.

13. The purchaser shall not require any title anterior to the will of dated . An abstract showing the title, subject as aforesaid, will be delivered to the purchaser by the vendor's solicitors,

Messrs. , upon request, at whose office the purchaser or his solicitor may compare the same with the documents therein mentioned; and all attested or other copies of deeds or writings, and all other evidence of whatsoever nature, which may be required in support of the title, ownership, or identity, shall be procured at the expense of the purchaser.

14. All objections to the title not made within five weeks from the date hereof shall be deemed to be waived; but should any objection be taken which the vendors shall decline to remove, they shall be at liberty to determine this contract by notice in writing, and no cost or expenses shall be payable by them to the purchaser.

15. On payment of the said sum of £ , with all arrears of interest and other payments, and on performance of so much of the conditions of this contract as the vendor shall consider a sufficient security for the performance of the residue of such conditions, the purchaser shall be entitled to a conveyance from the vendor; and if required by the vendor such conveyance shall also contain covenants by the purchaser to observe and perform such of the conditions of this contract as remain unperformed at the date of the conveyance; but notwithstanding such conveyance shall not contain any such covenant, the conditions of this contract shall remain binding on, and be capable of being enforced against, the purchaser, his heirs and assigns, in like manner as if the said conveyance had not been executed. The said conveyance shall have a plan of the purchased premises drawn thereon by the vendor's surveyor at the expense of the purchaser.

16. In case all or any part of any interest payable for the time being shall be in arrears for thirty days

or upwards, or in case default shall be made by the purchaser in performance of any one or more of the stipulations herein contained, the vendor shall be at liberty to re-sell the premises by public or private sale, subject to such conditions and stipulations as to title, user, enjoyment, or otherwise as he shall think proper, together with all buildings and other things thereon, and the deficiency (if any) together with all charges attending the same and such re-sale as aforesaid, shall be made good by the defaulter and be recoverable by the vendor as liquidated damages.

Form of Agreement for a Building Lease, with Provisions for Advances.

Memorandum of Agreement made this day of , between A B of , hereinafter called the lessor, his heirs, executors, administrators, and assigns, of the one part, and C D, hereinafter called the lessee, his executors and administrators, of the other part, whereby it is agreed as follows:—

1. In consideration of the rent, conditions, and covenants within named as soon as the lessee shall have completed to the satisfaction of his surveyor and ready for habitation and use the several messuages or dwelling-houses, erections, and appurtenances hereinafter agreed to be built, and the said surveyor shall have granted his certificate in writing to that effect—the lessor shall and will, by one or more good and sufficient lease or leases, demise to the said lessee All that piece or parcel of land situate in which is more particularly shown upon the plan drawn in the margin of these presents, and therein coloured red, together with the messuages or buildings to be erected thereon, with their appurtenances, for the term of

ninety-nine years from the day of at the yearly rent of five shillings for the first year of the said term, and the rent of £ for each superficial square yard of land to be comprised in such lease for the second and each succeeding year of the said term; such rents to be payable quarterly on the 25th day of March, the 24th day of June, the 29th day of September, and the 25th day of December of every year; the first of such quarterly payments to be made on the day of .

2. Every such lease shall contain the following covenants on the part of the lessee:—To pay the rent and the land tax, sewers rate, tithe rent-charge, and all other taxes and assessments, parliamentary or otherwise, except property tax, payable either by the landlord or tenant, for or in respect of the premises; to keep the said premises in good and substantial repair, and deliver the same up in good and substantial repair at the end of the term; to paint the external wood, cement, and iron work once in every three years, and the inside wood, iron, and other work usually painted once in every seven years, with two coats of good oil-colour; to insure and keep insured against fire, in the joint names of the lessor and lessee, in the Royal Insurance office or other approved office, the buildings comprised in such lease, in a sum at least equal to two-third parts of the value of such buildings, and to produce to the lessor the policy of every such insurance and the receipts for every premium whenever the same shall be demanded; and that in case of fire any money received by virtue of such insurance shall be forthwith expended in reinstating the premises, and if the same shall be insufficient for the purpose then to make up the deficiency out of the lessee's own moneys; to permit the lessor or his

agent, with or without workmen and others, at all reasonable times of the day during the same term, to enter and view the state of the premises, and during the last seven years of the term to take an inventory of the landlord's fixtures; not to carry on any trade or business on the said premises without the written consent of the lessor first had and obtained, and not to permit any encroachment upon the premises, or any right of light or other easement to be acquired over or upon the said premises by or in respect of the premises adjoining or near thereto; and also that any lessee will, within twenty-one days after every assignment or underlease of the said premises, or any part thereof, shall have been made, give notice in writing thereof to the lessor or his agent, stating the short effect and particulars of such assignment or underlease; and every such lease shall contain a condition or proviso for re-entry by the lessor upon non-payment of rent for twenty-one days, or breach of any of the said covenants, and shall also contain all other covenants and provisions (if any) usually inserted in leases of the like nature.

3. The lessee shall at his option have either one lease of all the said dwelling-houses to be erected as aforesaid, or separate leases of any one or more thereof, and in case of separate leases the said rent shall be rateably apportioned between the premises to be comprised in each lease; the amount of such apportioned rents respectively to be fixed and ascertained by the architect or surveyor for the time being of the lessor.

4. The lessee shall within one month from the date hereof commence, and before the day of erect, cover in, and complete, fit for habitation and use, upon the piece of ground hereby agreed to be demised, in a good, substantial, and workmanlike manner, with fit

and proper materials to be approved of by the lessor's surveyor, and under his direction and inspection, and according to a plan, elevation, and detail drawings thereof which have been signed by the parties hereto, and a copy whereof has been deposited with the said surveyor, brick-built and slated dwelling-houses, with the areas, forecourts, iron railings, gates, and garden walls, and other appurtenances thereto belonging.

The lessee shall not erect upon each of the plots numbered in the plan hereupon drawn more than one detached or two semi-detached houses. If detached, the houses shall be of the annual value of £ , and if semi-detached, of £ each; and a space of feet shall be left between the said buildings and the footwalk, which shall be used only for ornamental garden ground, and left unbuilt upon except for bay windows, steps, or porticoes.

As soon as the said houses shall be completed the lessee shall at his own expense remove all rubbish from so much of the street as is opposite thereto, and fill up (or lower) and level so much of the footwalk in front of the said piece of land as is coextensive with the said piece of land.

5. The lessor will pave or macadamize (at his option) and kerb, channel and finish the street, and the lessee shall gravel, or asphalte, or flag so much of the footwalk on the side thereof as is coextensive with the said piece of land; after which the lessee shall keep the said street and footpath in repair until adopted by the Sanitary Authority of the district.

The lessee will be allowed to connect any sewer or drain from the premises hereby agreed to be built with the main sewer laid by the lessor along the street extensive with the same, on condition that such con-

nection be made to the satisfaction of the surveyor to the Local Board, and that the roadway or any other part disturbed be made good to the satisfaction of the lessor's surveyor.

6. The lessee shall, without investigating the lessor's title or making any requisition or objection in respect thereof, accept a lease or leases of the said premises for the term, at the rent, and subject to the covenants and conditions hereinbefore expressed, and will execute a counterpart thereof, and will pay the costs and expenses of and incidental to the preparation and execution of this agreement, and of the said lease or leases, and the counterparts thereof respectively.

7. If the lessee shall in all respects observe and perform his part of this agreement, the lessor will advance to him, for the purpose of assisting him in the erection of the said houses, the sum of £ in respect of each house, in sums of not less than £ on the surveyor's estimate of two-thirds of the value of the work executed; all sums so to be advanced to bear interest thereon from the time of the advance thereof after the rate of five pounds per centum per annum, and all moneys advanced, together with the interest thereof, to be paid to the lessor on the day , but so nevertheless that it shall be competent for the lessee, if he shall think fit, to repay the same at any earlier period.

8. The lessor shall be at liberty to insure in his own name from loss or damage by fire the buildings to be erected on the said piece of land, or any building materials for the time being thereon, in a sum or sums which shall be equal in amount to any advances made by the lessor pursuant to this agreement, and which may for the time being remain unpaid, and the lessee shall repay to the lessor the sums expended in effecting

and keeping on foot any such insurance, with interest thereon at five per cent. per annum, from the time when such sums may have been expended.

If the lessee shall not complete the said messuages or dwelling-houses before the said day of , or shall not proceed with the works with proper diligence, or shall become bankrupt, or take the benefit of any Act for the relief of insolvent debtors, it shall be lawful for the lessor or his agent, if he thinks fit, to re-enter on the said piece of ground and take possession thereof and of all the buildings and materials which may be thereon, and to retain the same as his own absolute property.

Specification of Streets and Sewers.

Specification of Works requisite for forming and completing Streets and Sewers on the Estate, as shown by Plans and Sections accompanying this Specification, and prepared by .

GENERAL CONDITIONS.

Labour and Materials.—The contractor is to provide all materials and labour, as well as all carriage, tools, implements, tackle, and other things necessary for the due and proper execution of the works, and shall perform and complete every part of the works in a substantial and workmanlike manner, according to the true intent and meaning of this specification and the plans, sections, and drawings of the various parts, and to the entire satisfaction of the surveyor.

Drawings and Specification.—The plans, sections, specifications and details are to be taken to explain one another, and whatever is drawn or delineated on the plans or written in the specification is to be considered

as part of the contract and to be completed by the contractor. They are intended to include everything necessary to render the works complete, but should anything be omitted which may fairly be implied as included in the contract, the same shall be executed at the expense of the contractor.

Form of Tender.—The contractor's tender must state a gross amount for which the work will be completed, accompanied by a schedule of prices on which the tender is based; and should the surveyor think fit to make any alterations in the plans, specifications, &c., as the work proceeds, such alterations shall not annul the contract but shall be made subject to the schedule of prices.

Quality of Materials—Setting out.—The whole of the works shall be done to the entire satisfaction of the surveyor or any person whom he may appoint to inspect the same, who shall have power to reject any materials or order the reconstruction of any work which he may consider unsatisfactory. The works are to be set out by the contractor, who will be held responsible for their correctness.

Time of Completion.—The whole of the works shall be completed on or before the day of 18 . And the contractor shall pay as liquidated damages £1 for every day that any part of the said works shall by his default remain unfinished after that time, except in case of frost, inclement weather, or a local or general strike, when the contractor may suspend operations during their continuance and be allowed such further time as the surveyor may think reasonable.

Superintendence and Workmen.—The contractor shall give all necessary superintendence during the execution of his contract, and shall employ a good and compe-

tent foreman to manage and direct in his absence. The contractor must at once dismiss any workmen the surveyor may consider unfit to be employed upon the works, and they shall not be employed again without the consent of the surveyor.

Maintenance.—The contractor shall keep in repair and maintain the works for a period of three calendar months after their completion has been certified by the surveyor, and make good at his own cost any defects which shall appear during that time.

Mode of Payment.—Advances of money shall be made to the contractor monthly or otherwise as agreed upon, upon the surveyor's valuation of the work done, leaving 20 per cent. in hand as security, the balance to be paid at the expiration of the term of maintenance.

Power to take Work out of Contractor's Hands.—If the contractor shall become bankrupt, compound with or make assignment for the benefit of creditors, or suspend or delay the works, or shall neglect after twenty-four hours' notice to comply with any order of the surveyor, or to employ more men upon the works, or to remedy any defective or unsatisfactory work, the surveyor shall have full power to cancel the contract and to employ some other person to complete the work, or use such other remedy as he may think fit, deducting any loss incurred from any moneys then due to the contractor.

Accidents and Damages.—The contractor shall be at the expense of guarding and watching the whole of the works until their completion, and shall be responsible for any damage arising from storm or otherwise.

Security.—The contractor shall, if required, enter into a bond with two sureties in the sum of for the due fulfilment of the contract.

Sub-Contractors.—The contractor shall submit the name of any proposed sub-contractor for approval.

DESCRIPTION OF WORKS.—STREETS.

Earthworks.—The contractor shall execute all works for the formation of the proposed streets for receiving the foundations of the carriageway and footwalks, in conformity with the longitudinal and transverse sections, in a neat and workmanlike manner, using the earth taken from excavations to form the embanking where necessary, supplying any deficiency, and carting or otherwise removing any surplus earth to the place marked upon the plan, leaving the slopes of the embanking and cutting of a uniform inclination of 2 to 1. Lay 3-in. field drain pipes, where necessary, along bottom of slopes to keep the water from running over the adjoining land.

Carefully preserve any soil or sods taken from the site of the streets to spread over the slopes, or to spread upon the building plots as directed.

Grub up and remove all banks, fences, and walls on site of streets and footwalks. All trees which stand upon the site of streets are to be grubbed up, and the holes filled in and rammed.

Provide and lay pipes of sufficient size to tap the ditches where crossed by the line of streets. The ditches to be thoroughly cleaned out, and a bottom of hard rubbish formed for bedding the pipes.

Any materials excavated from the site of works are to be at the disposal of the contractor, and, under the approval of the surveyor, may be made use of for the purposes of the contract, as far as they are in accordance with the terms of this specification.

Excavations and Embankings.—Finish the excavations

and embankings of the streets to a line 1 foot 6 inches below the sectional line on the drawing. The footpaths to be left 3 inches below the sectional line at the curb-stones, rising 1 inch per yard, and prepared for paving.

FOUNDATIONS.

Hand pitch the whole area of the carriageway with hard rock, 10 inches deep, set on edge. Break off the projecting corners of the pitching-stones, and fill up the interstices between the stones with hard rock broken small.

Let the traffic run over the street so prepared until consolidated, and pronounced by the surveyor fit to receive the paving; the contractor all the time filling up the ruts and hollows, and maintaining the surface to the proper section. The surface of the pitching to be finished 8 inches below the sectional line on the drawing, and to be covered with a layer of clean fresh-water sand for the reception of the paving.

Or

Cover all roadways with a good layer of sand, brick-field waste, hard-burnt ballast, or cinders.

Or

Cover the carriageway with a bed of concrete 12 inches thick. The concrete to be composed of six parts of screened gravel, two parts of sand, and one part Portland cement. To be well rammed, and the surface to be carefully finished to the cross section of the paved roadway.

Boulder Paving.—Cover the carriageway with good hard boulder stones at least 6 inches deep on a bed of sand, each stone to be not less than 25 inches nor more than 35 inches in superficial area. The whole to be closely laid together on end, the largest being laid

nearest the channels, and the surface to be covered with 1 inch of clean gravel.

Macadam.—Provide, cart, and spread over the surface of the carriageway, as shown by transverse sections, broken granite or hard beach pebbles 6 inches thick, no stone to be larger than will pass through a 2-inch ring. It must be laid in two strata, each 3 inches thick, the first stratum being well consolidated before the second is laid on.

Or

Lay upon ballast 4 inches of clean nut gravel, to be topped with a layer of clay 1 inch thick. Cover same with a good coating of fine clean gravel 6 inches thick. No stone to be larger than will pass through a 2-inch ring.

Sett Paving.—Pave the streets with granite (or other approved) setts 3 inches wide, 6 inches deep, and from 5 to 7 inches in length, the setts to be squared throughout, laid in parallel and properly-bonded courses, and evenly bedded on a layer of fine gravel or sand, the joints to be filled with gravel, and the whole grouted with a mixture of sand and lime, or melted asphalt laid on hot, and the surface covered with fine gravel $\frac{1}{2}$ inch thick. Where directed, roll over the whole of the carriageway with a $4\frac{1}{2}$ -ton roller.

Curb-Stones.—Provide and set on each side of carriageway new curb-stones of Yorkshire stone free from shakes, pot holes, or blue veins, at least 2 feet in length, 18 inches in depth, and 6 inches in width. They must be fair tooled on the top, and also to a depth of 6 inches on the face and 4 inches on the back, the remainder of each stone to be neatly hammer dressed. The stones must be firmly bedded, close jointed, and true in line and gradient, and are to be laid on a bed of

land sand or fine riddled cinders, and not be laid on any portion of the embankment until it is solid.

Channel Stones.—The channel stones to be of Yorkshire stone, not less than 2 feet long, 10 inches wide, and 6 inches deep, to be square and without defects. They must be well and firmly bedded in sand previously well rammed, and have the same transverse inclination as that given to the carriageway. The joints to be filled in with sand or cinders.

Crossings.—Provide and lay where shown on the drawing, crossings of three courses each, with a course of setts between them, and pave with setts on each side of the crossings to the width of the footpath which is in the same line. Each stone to be worked perfectly true, and with parallel face. The bed, sides, and joints to be perfectly square and accurately dressed. A triangular groove, 1 inch wide, $\frac{3}{4}$ inch deep, to be run along the upper surface of each stone. Each stone to be from 2 to 3 feet long, 16 inches wide, and 9 inches deep.

Flagging.—Flag the footpaths and passages with new flags at least 3 inches thick, properly squared through and faced, and laid upon a 3-inch bed of sand, with an inclination of 1 inch to a yard, the joints being close and set in mortar. No flag of less area than four superficial feet will be allowed to be laid (except for closers or otherwise where the surveyor may permit). Lay along sides of passages grooved channel-stones, 12 inches by 6 inches, and provide and fix gullies 10 inches diameter, with cast-iron grating complete, and excavating for and connecting with main sewer.

SEWERS.

Pipes.—Provide earthenware or stoneware pipes glazed on both sides, of the several forms and dimen-

sions shown on drawings. The pipes to be of approved quality, hard burnt, straight, and without flaws, circular, in bore of the specified diameter, and of uniform thickness.

Provide and fix where shown on plan 6-inch curved junctions for future house drains, the ends to be closed up with a piece of tile or slate.

Make all arrangements with the local board for joining their sewer, and pay all fees required.

The lines and levels of the sewers, as shown upon the drawings, must be strictly adhered to, unless otherwise ordered by the surveyor.

Trenches.—The ground for the sewers and drains shall be excavated in open trenches at least 1 foot wider than the diameter of pipes, the material excavated being laid as compact as possible alongside the trenches. Any superfluous earth must be at once carted away by the contractor.

Pipe-laying.—The bottom of the trench must be cut to the exact shape of the pipes to be laid, and socket holes shall be formed at least 9 inches in length and 3 inches in thickness. Great care must be exercised in laying the pipes so as to give every one the exact inclination figured in the sections. The pipes shall be jointed with cement mixed with an equal measure of sand. The ends of all pipes or branches shall be securely stopped with stone plugs made to fit the sockets and well puddled. All junctions to meet the main sewer in a curve in the direction of its fall, and not at right angles.

Shoring.—The sides of the excavations shall be shored up with suitable timber where necessary; the contractor will be held responsible for all damages which may happen from neglect of this precaution.

And in any case where the surveyor shall direct, the timbering shall be left in and buried in the trench, and the cost of the timber will be allowed, unless the necessity for leaving it has arisen from carelessness in the work.

Filling Trenches.—After the pipes have been examined and approved by the surveyor, the soil on each side and 6 inches over the sewers shall then be carefully laid in, so as not to disturb the pipes, and solidly rammed down. The trenches shall then be filled in with layers of earth, 6 inches deep at one time, each layer being well rammed over the surface; the first layer shall be carefully placed over the pipes with a shovel, and not tipped or thrown from the surface; the pipes shall not be walked upon until this has been done.

The interior of the drains shall be carefully freed from all dirt and superfluous clay or cement as the work proceeds.

Ventilating Shafts.—Lamp holes or ventilating shafts to be formed where shown on the plans, and to be constructed of 9-inch fireclay glazed socket pipes properly connected with the sanitary pipe sewers, with vertical junctions, and to be covered at the top on the surface of ground with the ventilator adopted by the Sanitary Authority of the district, to be provided by the contractor.

Manholes.—Provide all necessary materials for, and build according to detail drawings, manholes where shown on plan. All the bricks to be of the hardest description, well burned, and without limestone or cracks. The mortar to be blue lias lime of the proportions of 2 to 1. The bottom stone to have a groove 12 inches diameter cut in the centre, and made to fit

the 12-inch drain pipes, and the smaller stones at each end to be also grooved and made to fit on the groove in the bottom stone and set in cement, leaving a clear passage for the water in the true line of fall.

Build 9-inch walls upon the stonework, providing centre and turning an arch, leaving the crown 4 feet 6 inches above the water-line. Build foot irons in the wall four courses of brickwork apart. Trowel edge the inside, and well puddle and ram the outside as the works proceed.

Provide and fix a 4-inch flag 3 feet 6 inches $\times$ 3 feet 6 inches at the top of brickwork, pierced with a hole 15 inches by 18 inches, and finish with an iron block paving grating similar to those used by the Local Board.

Gullies.—Build in 9-inch brickwork in cement with flag bottom and trap (or provide and fix of approved pattern) gullies with proper gratings fixed complete, and connect same with drainage, making good joints, and leaving all firm and complete.

QUANTITIES OF FORMING, BALLASTING, CURB-STONING, CHANNELLING,
PAVING AND SEWERING STREETS AND FLAGGING FOOTWALKS
AND PASSAGES ON THE ESTATE.

	Quantity.	Price.	£	s.	d.
FORMATION.					
Embanking required . . . Cubic yards					
Excavating ditto . . . " "					
Embanking deficient . . . " "					
Forming surface for streets and footpaths . . . Square yards					
Removing fences and banks . Lineal yards					
CURB-STONES.					
Curb-stones, 12" $\times$ 6", York- shire stone . . . " "					
Granite turns, 12" $\times$ 6", — ft. radius . . . " "					
Channelling and crossing stones, 12" $\times$ 6", York- shire stone . . . " "					

	Quantity.	Price.	£	s.	d.
PAVED ROADS.					
Rock pitching, 12 inches in depth	Square yards				
Paving, with setts 6 inches deep on a bed of sand	" "				
Paving, with boulders ditto	" "				
Ramming and packing with gravel	" "				
MACADAMIZED ROADS.					
Sanding or cinderling 9 inches thick	" "				
Nut gravel, thickness 4 inches	" "				
Clay, 1 inch thick, in one layer between gravel	" "				
Fine gravel or broken stones, 6 inches thick	" "				
Boulder paving, in channels 18 inches wide	Lineal yards				
FOOTPATHS.					
Flagging, 3-inch self-faced Yorkshire stone, free from flaws, beds, and twists, properly squared and laid	Square yards				
Gravelling footpaths, 3 inches thick	" "				
PASSAGES.					
Excavating	Cubic yards				
Grooved channel-stones, properly squared and laid	Lineal yards				
Yorkshire stone flags, self-faced, 3 inches thick, properly squared and laid	Square yards				
Gullies, inches diameter, excavating for and connecting with main sewer, and cast-iron gratings complete similar to those used by the Local Board	No.				
SEWERING.					
Excavating	Cubic yards				
6-inch earthenware socket pipes and laying, average depth feet	Lineal yards				
9-inch ditto ditto, average depth feet	" "				
12-inch ditto ditto, average depth feet	" "				
15-inch ditto ditto, average depth feet	" "				
6-inch junctions, plugged and made good with cement, placed every feet	No.				

QUANTITIES.

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SEWERING.		Quantity.	Price.	£	s.	d.
Junctions, 15" × 12"	No. . . .					
" 12" × 9"	"					
" 9" × 6"	"					
Gullies, inches diameter, including fixing and connecting with drains .	"					
Cast-iron gratings for gullies, inches by inches, similar to those used by the Local Board of Health	"					
Manholes, feet inches by feet inches, 9-inch brickwork set in cement	Square yards					
Manhole covers and fixing, similar to those used by Local Board of Health	No. . . .					
Flags, feet inches by feet inches by feet inches, for foundation to manholes	"					
Making good joints to pipes with cement	"					
Connect with public sewer, paying all Local Board charges						
6-inch socketed pipes and laying, to tap ditch at end of main, end to be protected by iron grid; average depth feet	Lineal yards					
Cutting for diversion of watercourse and filling up old courses with clay	" "					
3-inch common tiles, laid 18 inches below surface and cutting, filled with nut gravel						
Properly ram all, filling in 6-inch layers						
Carried forward				£		

SUMMARY OF QUANTITIES FOR THE CONSTRUCTION OF STREETS, &c.,
ON ESTATE.

	£	s.	d.
Amount brought forward			
Watchman, fires, and lighting, during the progress of the work			
Maintaining roads and works for months			
Contingencies as specified			
Add per cent. for quantities			

TABLE FOR PURCHASING OF LEASES, ESTATES, OR ANNUITIES FOR TERMS OF YEARS CERTAIN, OR THE PRESENT VALUE OF £1 PER ANNUM FOR ANY NUMBER OF YEARS.—(See "Prices and Valuations.")

Years	3 per Cent.	4 per Cent.	5 per Cent.	6 per Cent.	7 per Cent.	8 per Cent.	9 per Cent.	10 per Cent.	Years.
1	0.97	0.96	0.95	0.94	0.94	0.93	0.92	0.91	1
2	1.91	1.89	1.86	1.83	1.81	1.78	1.76	1.74	2
3	2.83	2.78	2.72	2.67	2.62	2.58	2.53	2.49	3
4	3.72	3.63	3.55	3.47	3.39	3.31	3.24	3.17	4
5	4.58	4.45	4.33	4.21	4.10	3.99	3.89	3.79	5
6	5.42	5.24	5.08	4.92	4.77	4.62	4.49	4.36	6
7	6.23	6.00	5.79	5.58	5.39	5.21	5.03	4.87	7
8	7.02	6.73	6.46	6.21	5.97	5.75	5.54	5.34	8
9	7.79	7.44	7.11	6.80	6.52	6.25	6.00	5.76	9
10	8.53	8.11	7.72	7.36	7.02	6.71	6.42	6.15	10
11	9.25	8.76	8.31	7.89	7.50	7.14	6.81	6.50	11
12	9.95	9.39	8.86	8.38	7.94	7.54	7.16	6.81	12
13	10.64	9.99	9.39	8.85	8.36	7.90	7.49	7.10	13
14	11.30	10.56	9.90	9.30	8.75	8.24	7.79	7.37	14
15	11.94	11.12	10.38	9.71	9.11	8.56	8.06	7.61	15
16	12.56	11.65	10.84	10.11	9.45	8.85	8.31	7.82	16
17	13.17	12.17	11.27	10.48	9.76	9.12	8.54	8.02	17
18	13.75	12.66	11.69	10.83	10.06	9.37	8.76	8.20	18
19	14.32	13.13	12.09	11.16	10.34	9.60	8.95	8.37	19
20	14.88	13.59	12.46	11.47	10.59	9.82	9.13	8.51	20
21	15.42	14.03	12.82	11.76	10.84	10.02	9.29	8.65	21
22	15.94	14.45	13.16	12.04	11.06	10.20	9.44	8.77	22
23	16.44	14.86	13.49	12.30	11.27	10.37	9.58	8.88	23
24	16.94	15.25	13.80	12.55	11.47	10.53	9.71	8.99	24
25	17.41	15.62	14.09	12.78	11.65	10.68	9.82	9.08	25
26	17.88	15.98	14.38	13.00	11.83	10.81	9.93	9.16	26
27	18.33	16.33	14.64	13.21	11.99	10.94	10.03	9.24	27
28	18.76	16.66	14.90	13.41	12.14	11.05	10.12	9.31	28
29	19.19	16.98	15.14	13.59	12.28	11.16	10.20	9.37	29
30	19.60	17.29	15.37	13.77	12.41	11.26	10.27	9.43	30
31	20.00	17.59	15.69	13.93	12.53	11.35	10.34	9.48	31
32	20.39	17.87	15.80	14.08	12.65	11.44	10.41	9.53	32
33	20.77	18.15	16.00	14.23	12.75	11.51	10.46	9.57	33
34	21.13	18.41	16.19	14.37	12.85	11.59	10.52	9.61	34
35	21.49	18.67	16.37	14.50	12.95	11.66	10.57	9.64	35
36	21.83	18.91	16.55	14.62	13.04	11.72	10.61	9.68	36
37	22.17	19.14	16.71	14.74	13.12	11.78	10.65	9.71	37
38	22.49	19.37	16.87	14.85	13.19	11.83	10.69	9.73	38
39	22.81	19.58	17.02	14.95	13.26	11.88	10.73	9.76	39
40	23.12	19.79	17.16	15.05	13.33	11.93	10.76	9.78	40
41	23.41	19.99	17.29	15.14	13.39	11.97	10.79	9.80	41
42	23.70	20.19	17.42	15.23	13.45	12.01	10.81	9.82	42
43	23.98	20.37	17.55	15.31	13.51	12.04	10.84	9.83	43
44	24.25	20.55	17.66	15.38	13.56	12.08	10.86	9.85	44

VALUATION TABLES.

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Years.	3 per Cent.	4 per Cent.	5 per Cent.	6 per Cent.	7 per Cent.	8 per Cent.	9 per Cent.	10 per Cent.	Years.
45	24·52	20·72	17·77	15·46	13·61	12·11	10·88	9·86	45
46	24·78	20·89	17·88	15·52	13·65	12·14	10·90	9·88	46
47	25·03	21·04	17·98	15·59	13·69	12·16	10·92	9·89	47
48	25·27	21·20	18·08	15·65	13·73	12·19	10·93	9·90	48
49	25·50	21·34	18·17	15·71	13·77	12·21	10·95	9·91	49
50	25·73	21·48	18·26	15·76	13·80	12·23	10·96	9·92	50
55	26·77	22·11	18·63	15·99	13·94	12·32	11·01	9·95	55
60	27·68	22·62	18·93	16·16	14·04	12·38	11·05	9·97	60
65	28·45	23·05	19·16	16·29	14·11	12·42	11·07	9·98	65
70	29·12	23·40	19·34	16·39	14·16	12·44	11·08	9·99	70
75	29·70	23·68	19·49	16·46	14·20	12·46	11·09	9·99	75
80	30·20	23·92	19·60	16·51	14·22	12·47	11·10	10·00	80
85	30·63	24·11	19·68	16·55	14·24	12·48	11·10	10·00	85
90	31·00	24·27	19·75	16·58	14·25	12·49	11·11	10·00	90
95	31·32	24·40	19·81	16·60	14·26	12·49	11·11	10·00	95
100	31·60	24·51	19·85	16·62	14·27	12·49	11·11	10·00	100
Perp.	33·33	25·00	20·00	16·67	14·29	12·50	11·11	10·00	Perp.

TABLE SHOWING THE ANNUAL SINKING FUND TO BE SET APART TO PROVIDE £1 FOR ANY GIVEN NUMBER OF YEARS.—See ("Prices and Valuations.")

Years.	8 per Cent.	8½ per Cent.	4 per Cent.	4½ per Cent.	5 per Cent.	6 per Cent.	7 per Cent.	8 per Cent.	Years.
1	1·0000	1·0000	1·0000	1·0000	1·0000	1·0000	1·0000	1·0000	1
2	·4926	·4914	·4902	·4890	·4878	·4854	·4831	·4808	2
3	·3235	·3219	·3204	·3188	·3172	·3141	·3111	·3080	3
4	·2390	·2373	·2355	·2337	·2320	·2286	·2252	·2219	4
5	·1884	·1865	·1846	·1828	·1810	·1774	·1739	·1705	5
6	·1546	·1527	·1508	·1489	·1470	·1434	·1398	·1363	6
7	·1305	·1285	·1266	·1247	·1228	·1191	·1156	·1121	7
8	·1125	·1105	·1085	·1066	·1047	·1010	·0975	·0940	8
9	·0984	·0964	·0945	·0926	·0907	·0870	·0835	·0801	9
10	·0872	·0852	·0833	·0814	·0795	·0759	·0724	·0690	10
11	·0781	·0761	·0742	·0723	·0704	·0668	·0634	·0601	11
12	·0705	·0685	·0666	·0647	·0628	·0593	·0559	·0527	12
13	·0640	·0621	·0601	·0583	·0565	·0530	·0497	·0465	13
14	·0585	·0566	·0547	·0528	·0510	·0476	·0443	·0413	14
15	·0538	·0518	·0499	·0481	·0463	·0430	·0398	·0368	15
16	·0496	·0477	·0458	·0440	·0423	·0390	·0359	·0330	16
17	·0460	·0440	·0422	·0404	·0387	·0354	·0324	·0296	17
18	·0427	·0408	·0390	·0372	·0355	·0324	·0294	·0267	18
19	·0398	·0379	·0361	·0344	·0327	·0296	·0268	·0241	19
20	·0372	·0354	·0336	·0319	·0302	·0272	·0244	·0219	20
21	·0349	·0330	·0313	·0296	·0280	·0250	·0223	·0198	21
22	·0327	·0309	·0292	·0275	·0260	·0230	·0204	·0180	22
23	·0308	·0290	·0273	·0257	·0241	·0213	·0187	·0164	23
24	·0290	·0273	·0256	·0246	·0225	·0197	·0172	·0150	24
25	·0274	·0257	·0240	·0224	·0210	·0182	·0158	·0137	25
26	·0259	·0242	·0226	·0210	·0196	·0169	·0146	·0125	26
27	·0246	·0229	·0212	·0197	·0183	·0157	·0134	·0114	27
28	·0233	·0216	·0200	·0185	·0171	·0146	·0124	·0105	28
29	·0221	·0204	·0189	·0174	·0160	·0136	·0114	·0096	29
30	·0210	·0194	·0178	·0164	·0151	·0126	·0106	·0088	30
31	·0200	·0184	·0169	·0154	·0141	·0118	·0098	·0081	31
32	·0190	·0174	·0160	·0146	·0133	·0110	·0091	·0075	32
33	·0182	·0166	·0151	·0137	·0125	·0103	·0084	·0069	33
34	·0173	·0158	·0143	·0130	·0118	·0096	·0078	·0063	34
35	·0165	·0150	·0136	·0123	·0111	·0090	·0072	·0058	35
36	·0158	·0143	·0129	·0116	·0104	·0084	·0067	·0053	36
37	·0151	·0136	·0122	·0110	·0098	·0079	·0062	·0049	37
38	·0145	·0130	·0116	·0104	·0093	·0074	·0058	·0045	38
39	·0138	·0124	·0111	·0099	·0088	·0069	·0054	·0042	39
40	·0133	·0118	·0105	·0093	·0083	·0065	·0050	·0039	40
41	·0127	·0113	·0100	·0089	·0078	·0061	·0047	·0036	41
42	·0122	·0108	·0095	·0084	·0074	·0057	·0043	·0033	42
43	·0117	·0103	·0091	·0080	·0070	·0053	·0040	·0030	43
44	·0112	·0099	·0087	·0076	·0066	·0050	·0038	·0028	44
45	·0108	·0095	·0083	·0072	·0063	·0047	·0035	·0026	45
46	·0104	·0091	·0079	·0068	·0059	·0044	·0033	·0024	46
47	·0100	·0087	·0075	·0065	·0056	·0041	·0030	·0022	47
48	·0096	·0083	·0072	·0062	·0053	·0039	·0028	·0020	48
49	·0092	·0080	·0069	·0059	·0050	·0037	·0026	·0019	49

VALUATION TABLES.

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Years.	3 per Cent.	3½ per Cent.	4 per Cent.	4½ per Cent.	5 per Cent.	6 per Cent.	7 per Cent.	8 per Cent.	Years.
50	·0089	·0076	·0066	·0056	·0048	·0034	·0025	·0017	50
51	·0085	·0073	·0063	·0053	·0045	·0032	·0023	·0016	51
52	·0082	·0070	·0060	·0051	·0043	·0030	·0021	·0015	52
53	·0079	·0067	·0057	·0048	·0041	·0029	·0020	·0014	53
54	·0076	·0065	·0055	·0046	·0039	·0027	·0019	·0013	54
55	·0073	·0062	·0052	·0044	·0037	·0025	·0017	·0012	55
56	·0071	·0060	·0050	·0042	·0035	·0024	·0016	·0011	56
57	·0068	·0057	·0048	·0040	·0033	·0022	·0015	·0010	57
58	·0066	·0055	·0046	·0038	·0031	·0021	·0014	·0009	58
59	·0064	·0053	·0044	·0036	·0030	·0020	·0013	·0009	59
60	·0061	·0051	·0042	·0035	·0028	·0019	·0012	·0008	60
61	·0059	·0049	·0040	·0033	·0027	·0018	·0011	·0007	61
62	·0057	·0047	·0039	·0031	·0026	·0017	·0011	·0007	62
63	·0055	·0045	·0037	·0030	·0024	·0016	·0010	·0006	63
64	·0053	·0044	·0035	·0029	·0023	·0015	·0009	·0006	64
65	·0051	·0042	·0034	·0027	·0022	·0014	·0009	·0005	65
66	·0050	·0040	·0033	·0026	·0021	·0013	·0008	·0005	66
67	·0048	·0039	·0031	·0025	·0020	·0012	·0008	·0005	67
68	·0046	·0037	·0030	·0024	·0019	·0012	·0007	·0004	68
69	·0045	·0036	·0029	·0023	·0018	·0011	·0007	·0004	69
70	·0043	·0035	·0027	·0022	·0017	·0010	·0006	·0004	70
71	·0042	·0033	·0026	·0021	·0016	·0010	·0006	·0003	71
72	·0041	·0032	·0025	·0020	·0015	·0009	·0005	·0003	72
73	·0039	·0031	·0024	·0019	·0015	·0009	·0005	·0003	73
74	·0038	·0030	·0023	·0018	·0014	·0008	·0005	·0003	74
75	·0037	·0029	·0022	·0017	·0013	·0008	·0004	·0002	75
76	·0035	·0028	·0021	·0016	·0013	·0007	·0004	·0002	76
77	·0034	·0027	·0021	·0016	·0012	·0007	·0004	·0002	77
78	·0033	·0026	·0020	·0015	·0011	·0006	·0004	·0002	78
79	·0032	·0025	·0019	·0014	·0011	·0006	·0003	·0002	79
80	·0031	·0024	·0018	·0014	·0010	·0006	·0003	·0002	80
81	·0030	·0023	·0017	·0013	·0010	·0005	·0003	·0002	81
82	·0029	·0022	·0017	·0013	·0009	·0005	·0003	·0001	82
83	·0028	·0021	·0016	·0012	·0009	·0005	·0003	·0001	83
84	·0027	·0021	·0015	·0011	·0008	·0005	·0002	·0001	84
85	·0026	·0020	·0015	·0011	·0008	·0004	·0002	·0001	85
86	·0026	·0019	·0014	·0010	·0008	·0004	·0002	·0001	86
87	·0025	·0019	·0014	·0010	·0007	·0004	·0002	·0001	87
88	·0024	·0018	·0013	·0010	·0007	·0004	·0002	·0001	88
89	·0023	·0017	·0013	·0009	·0007	·0003	·0002	·0001	89
90	·0023	·0017	·0012	·0009	·0006	·0003	·0002	·0001	90
91	·0022	·0016	·0012	·0008	·0006	·0003	·0001	·0001	91
92	·0021	·0015	·0011	·0008	·0006	·0003	·0001	·0001	92
93	·0021	·0015	·0011	·0008	·0005	·0003	·0001	·0001	93
94	·0020	·0014	·0010	·0007	·0005	·0003	·0001	·0001	94
95	·0019	·0014	·0010	·0007	·0005	·0002	·0001	·0001	95
96	·0019	·0013	·0010	·0007	·0005	·0002	·0001	·0001	96
97	·0018	·0013	·0009	·0006	·0004	·0002	·0001	·0001	97
98	·0018	·0012	·0009	·0006	·0004	·0002	·0001	·0001	98
99	·0017	·0012	·0008	·0006	·0004	·0002	·0001	·0001	99
100	·0016	·0012	·0008	·0006	·0004	·0002	·0001	·0001	100

The sinking fund is assumed to be put by at the end of the year.

SCALE OF SOLICITORS' COSTS FOR CONVEYANCES,
LEASES, &c.,

Extracted from the General Order made in pursuance of the "Solicitors' Remuneration Act, 1881," to take effect from and after the 31st day of December, 1882.

Vendor's solicitor for deducing title to freehold, copyhold, or leasehold property, and perusing and completing conveyance (including preparation of contract or conditions of sale, if any)—

For the first £1,000	30s. per £100
For the second and third £1,000	20s. „
For the fourth and each subsequent £1,000, up to £10,000	10s. „
For each subsequent £1,000, up to £100,000	5s. „

Purchaser's solicitor for investigating title to freehold, copyhold, or leasehold property, and preparing and completing conveyance (including perusal and completion of contract, if any) same scale as above.

SCALE OF CHARGES AS TO CONVEYANCES IN FEE,
OR FOR ANY OTHER FREEHOLD ESTATE RESERVING RENT, OR BUILDING
LEASES RESERVING RENT.

Vendor's or lessor's solicitor for preparing, settling, and completing conveyance and duplicate, or lease and counterpart—

AMOUNT OF ANNUAL RENT.	AMOUNT OF REMUNERATION.
Where it does not exceed £5	£5.
Where it exceeds £5 and does not exceed £50	The same payment as on a rent of £5, and also 20 per cent. on the excess beyond £5.
Where it exceeds £50 but does not exceed £150	The same payment as on a rent of £50, and 10 per cent. on the excess beyond £50.
Where it exceeds £150	The same payment as on a rent of £150, and 5 per cent. on the excess beyond £150.

Fractions of £5 to be reckoned as £5.

Where a varying rent is payable, the amount of

annual rent is to mean the largest amount of annual rent.

Purchaser's or lessee's solicitor for perusing draft and completing One half of the amount payable to the vendor's or lessor's solicitor.

Where a solicitor is concerned for both vendor and purchaser, or lessor and lessee, he is to charge the vendor's or lessor's solicitor's charges, and one-half of that of the purchaser's or lessee's solicitor.

Where a conveyance or lease is partly in consideration of a money payment or premium, and partly of a rent, then, in addition to the remuneration hereby prescribed in respect of the rent, there shall be paid a further sum equal to the remuneration on a purchase at a price equal to such money payment or premium.

STAMPS.

The Stamp Act, 1870, 33 & 34 Vict. c. 97, fixes the following duties:—

		s.	d.
CONVEYANCE, where the purchase-money shall not exceed £5		0	6
Exceeding £5 and not exceeding £10		1	0
„ £10 „ „ £15		1	6
„ £15 „ „ £20		2	0
„ £20 „ „ £25		2	6
For every additional £25 up to £300		2	6
If exceeding £300, then for every £50		5	0

LEASES—Lease or Tack of any lands, &c., at a yearly rent—

Exceeding	Not exceeding.	Not exceeding 35 years.		Between 35 years and 100 years.		Exceeding 100 years.	
£	£	£	s. d.	£	s. d.	£	s. d.
	5	0	0 6	0	3 0	0	6 0
5	10	0	1 0	0	6 0	0	12 0
10	15	0	1 6	0	9 0	0	18 0
15	20	0	2 0	0	12 0	1	4 0
20	25	0	2 6	0	15 0	1	10 0
25	50	0	5 0	1	10 0	3	0 0
50	75	0	7 6	2	5 0	4	10 0
75	100	0	10 0	3	0 0	6	0 0
100 for £50 or fractional part of £50		0	5 0	1	10 0	3	0 0

Agreement for lease not exceeding 35 years same as actual lease.

Leases for which both premium or fine and rent are paid are charged both as leases and conveyances.

Duplicate or counterpart of any instrument, where the duty does not amount to 5s., the same as the original instrument, and in any other case 5s.

LAND AGENTS' AND SURVEYORS' CHARGES.

For the sale of freehold and copyhold estates and ground leases by private contract, £5 per cent. on the first £100; $2\frac{1}{2}$ per cent. up to £5,000; and on the residue above that sum, $1\frac{1}{2}$ per cent.

For negotiating the purchase of estates, £1 per cent.

For selling or letting building land in lots, £5 per cent. upon purchase-money, amount of one year's ground-rent, or by agreement.

For valuations for mortgage, £1 per cent. up to £1,000, and 5s. per cent. on all above that sum upon the full amount of valuation, and if the money be not advanced half the above scale.

For endorsing plans on deeds from five shillings to one guinea each, or half-a-guinea to two guineas the pair.

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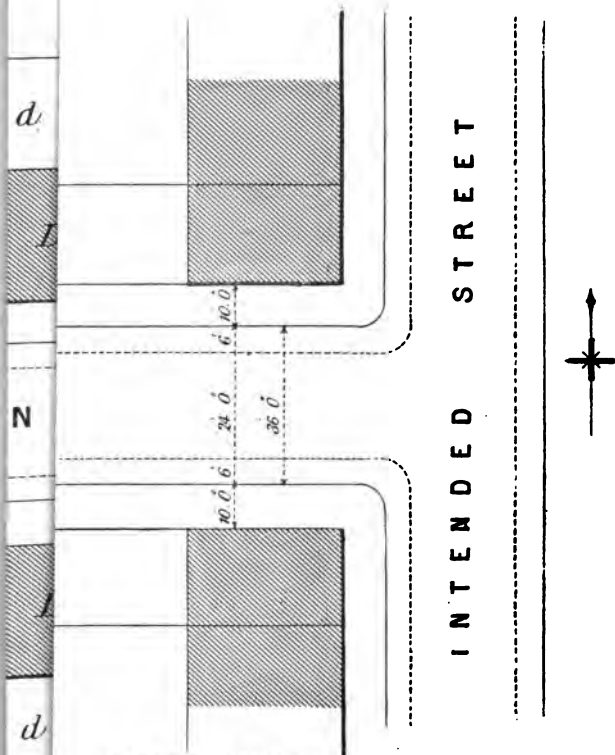
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PLATE I.

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CONSTRUCTION.

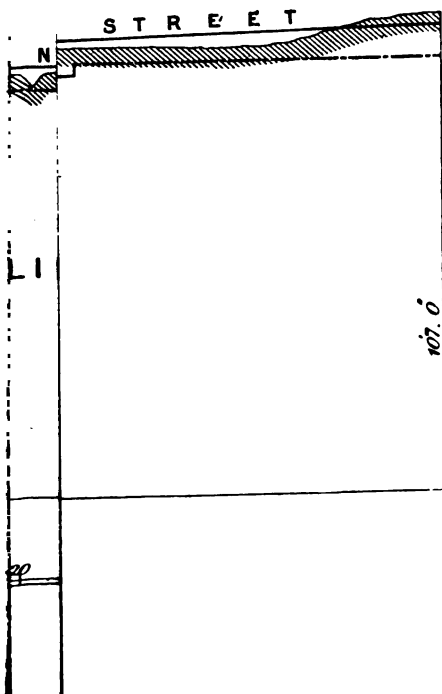
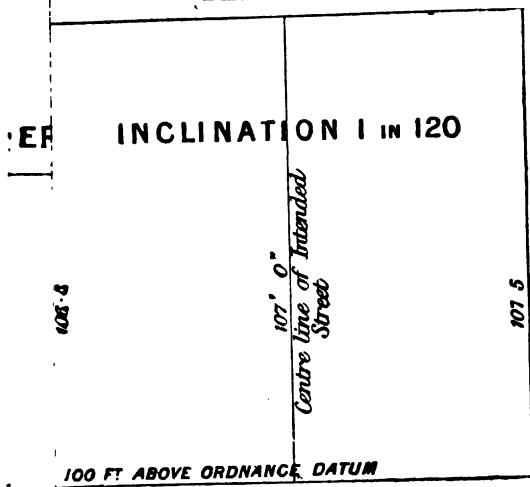
Foundation 9 inches cinders.

3 inches Gravel & Sand.

Top Covering 6 inches Macadam.

Footpaths Flagged.

PLATE II.



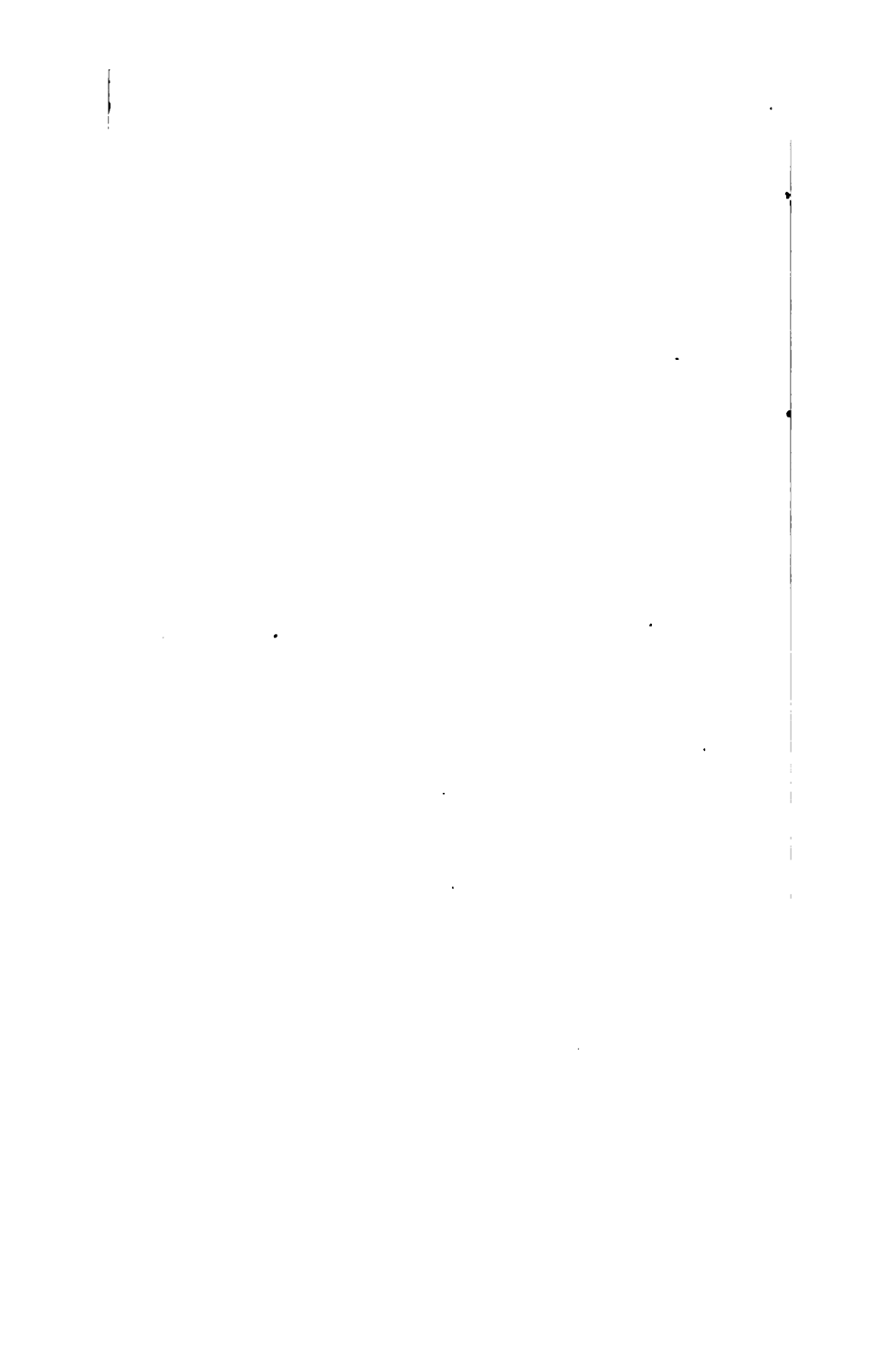
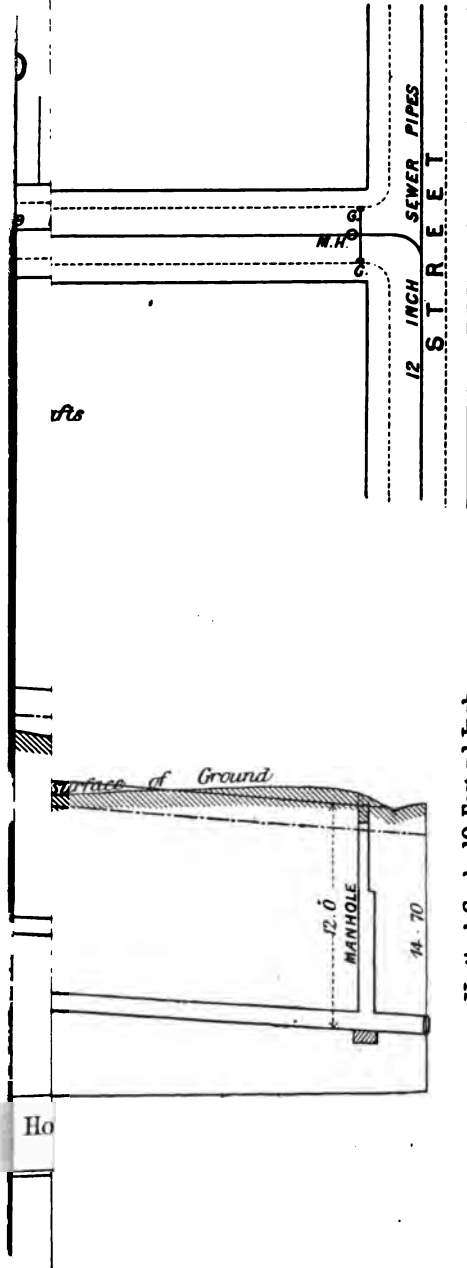
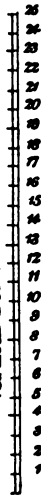


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